

# AGRICULTURAL CHEMICALS



## *In this issue:*

**NAC At the Homestead**

**Sales Symposiums**

**Antiresistant DDT**

**Solution Makers Convene**

**Fertilizer Round Table**

**Cornell Pesticide Conference**

**Control Officials Meet**

**Oregon Horticultural Conference**

**New Olin Laboratory**

**CUSTOM APPLICATOR SECTION**

**December 1961**



## SAFEST BAG TO SHIP, ANYWAY!

*Chase bags with built-in protection for moisture-sensitive products!*

The new Chase Poly-Ply Multiwall Bag is a long step forward in moisture-resistant packaging. It carries its own built-in protection with an entirely new construction—an intermediate ply of sheet polyethylene (not a liner) between two sheets of heavy duty kraft paper. Its superior moisture resistance permits safe storage of hygroscopic chemicals for months!

What's more, this new Chase Poly-Ply Multiwall is easier to handle—more flexible at low temperatures—highly resistant to abrasion

and rupture—yet economical in cost. Already, users are reporting highly satisfactory results.

Do you package moisture-sensitive products—chemicals, foods, fertilizers or others? This bag is a new and better solution to your packaging problem. It is available in 25-, 50-, and 100-pound sizes. Ask your Chase Man for the full story.

**CHASE BAG COMPANY**  
255 Lexington Avenue • New York 17, N.Y.

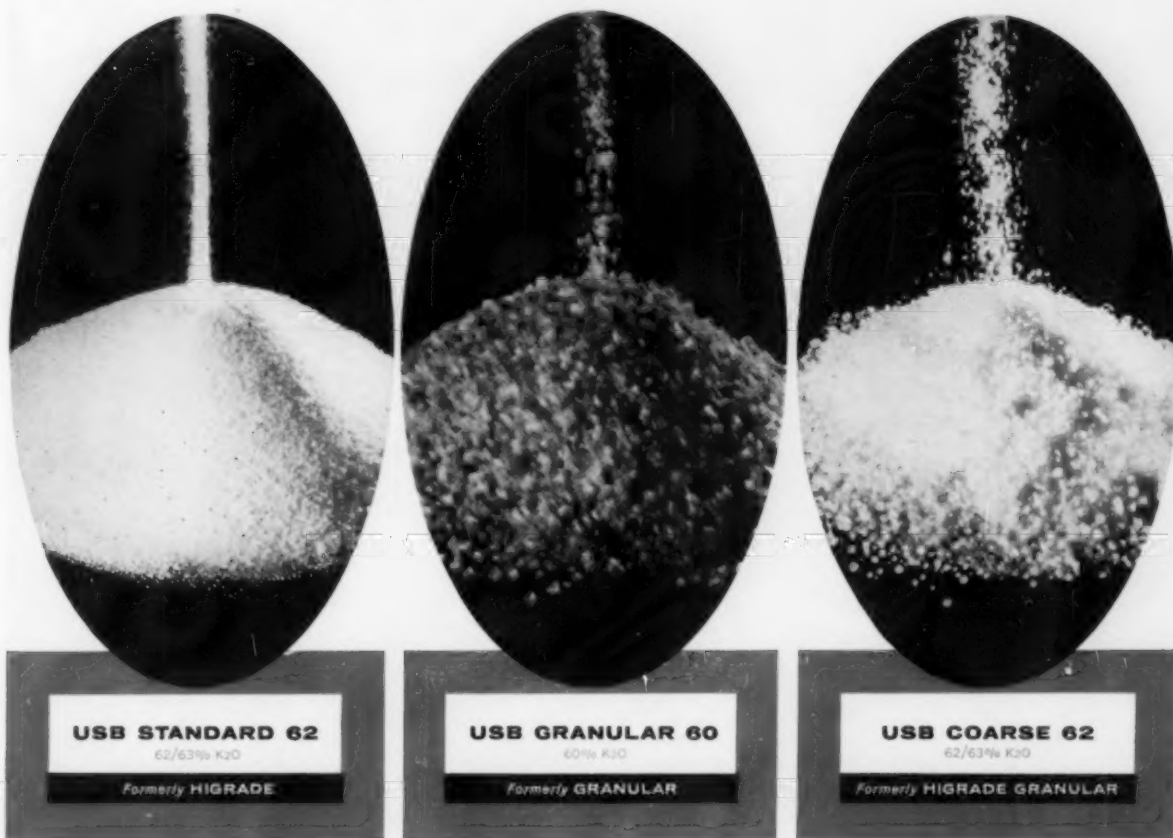
New Poly Insert Sleeve for added protection in valve area.



Inside view of Poly Insert Sleeve. Advantages include:

- replacement of tuck-in sleeve
- positive closing action • easy placement of bag on filling tube
- reduction of product waste
- moisture protection in sleeve

# 3 types of **POTASH** specially sized for you..



## To make the best fertilizers...

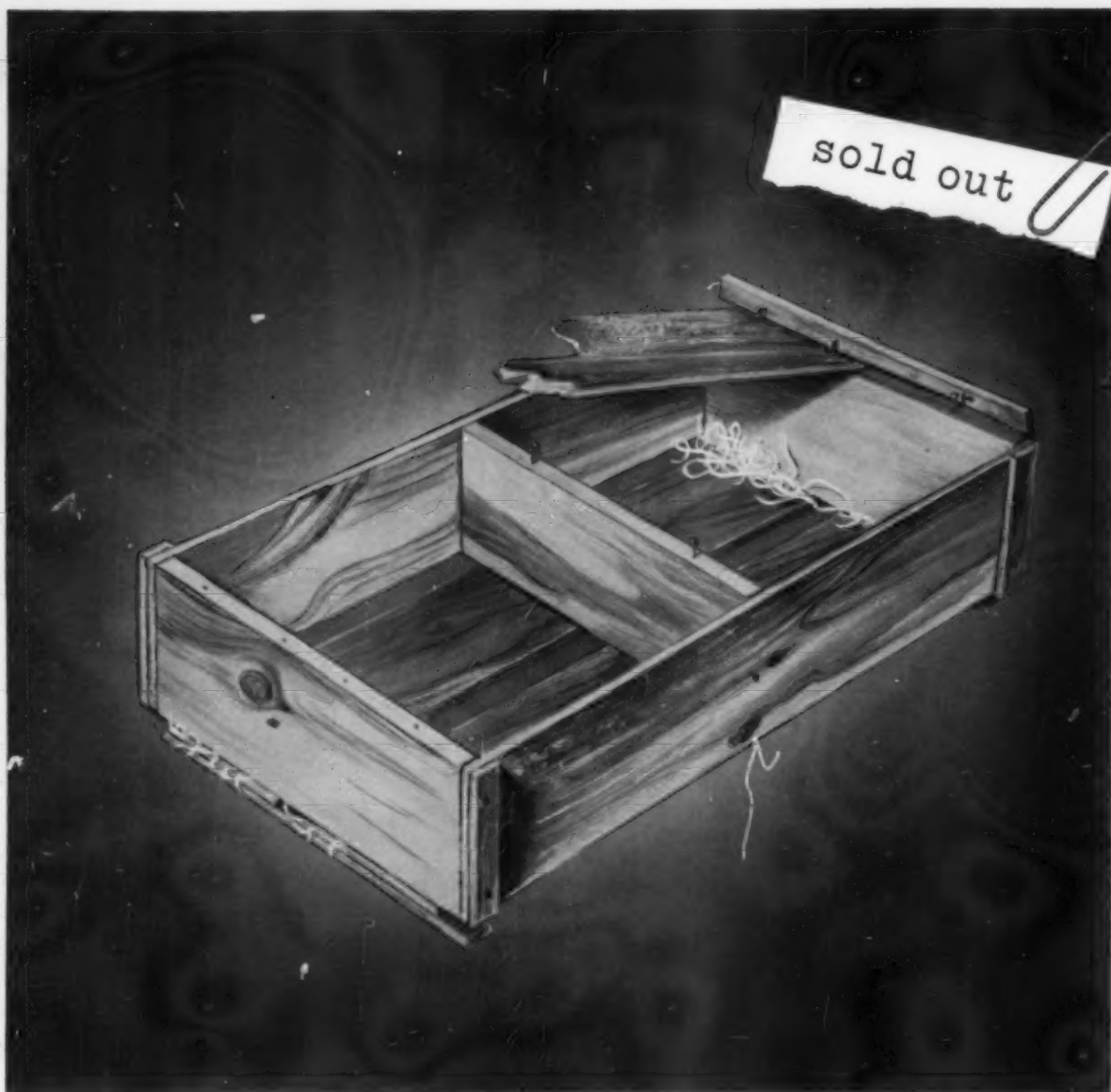
Each of our three types of high quality muriate of potash is ideally sized to meet your particular manufacturing requirements. Both of the white grades — STANDARD and COARSE — contain the highest possible K<sub>2</sub>O (62/63%) and make feasible the manufacture of the highest analysis mixtures. Our GRANULAR 60 is ideally suited for mixtures requiring muriate of a larger particle size... or for direct application. All three products are refined to assure free-flowing and non-caking properties during handling and storage.

For nearly thirty years our products and services have kept pace with your exacting needs. Call, telex or wire one of our nearby offices for prompt delivery.

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Because the fruit and vegetable crops were treated with  
**TRIANGLE BRAND COPPER SULFATE**

Regular or basic copper sulfate should be mixed in insecticide-fungicide sprays and dusts to insure appetizing, attractive fruits and vegetables that consumers "reach for."

When used in fertilizers, Triangle Brand Copper Sulfate helps to enrich the soil, resulting in healthy, profitable crops.

Help your customers produce more profitable crops. Use regular or basic Triangle Brand Copper Sulfate in your fertilizer and insecticide-fungicide formulations...it will mean more money in your pocket!



**phelps  
dodge** refining corporation

300 PARK AVENUE • NEW YORK 22, NEW YORK

**AGRICULTURAL CHEMICALS**





#### This Month's Cover

Using a micropipettor, a plant physiologist at Olin Mathieson's new agricultural chemicals research laboratory, New Brunswick, N. J., places a drop of experimental fungicide on the leaf of a tomato plant. See story on Page 43.

#### Publisher

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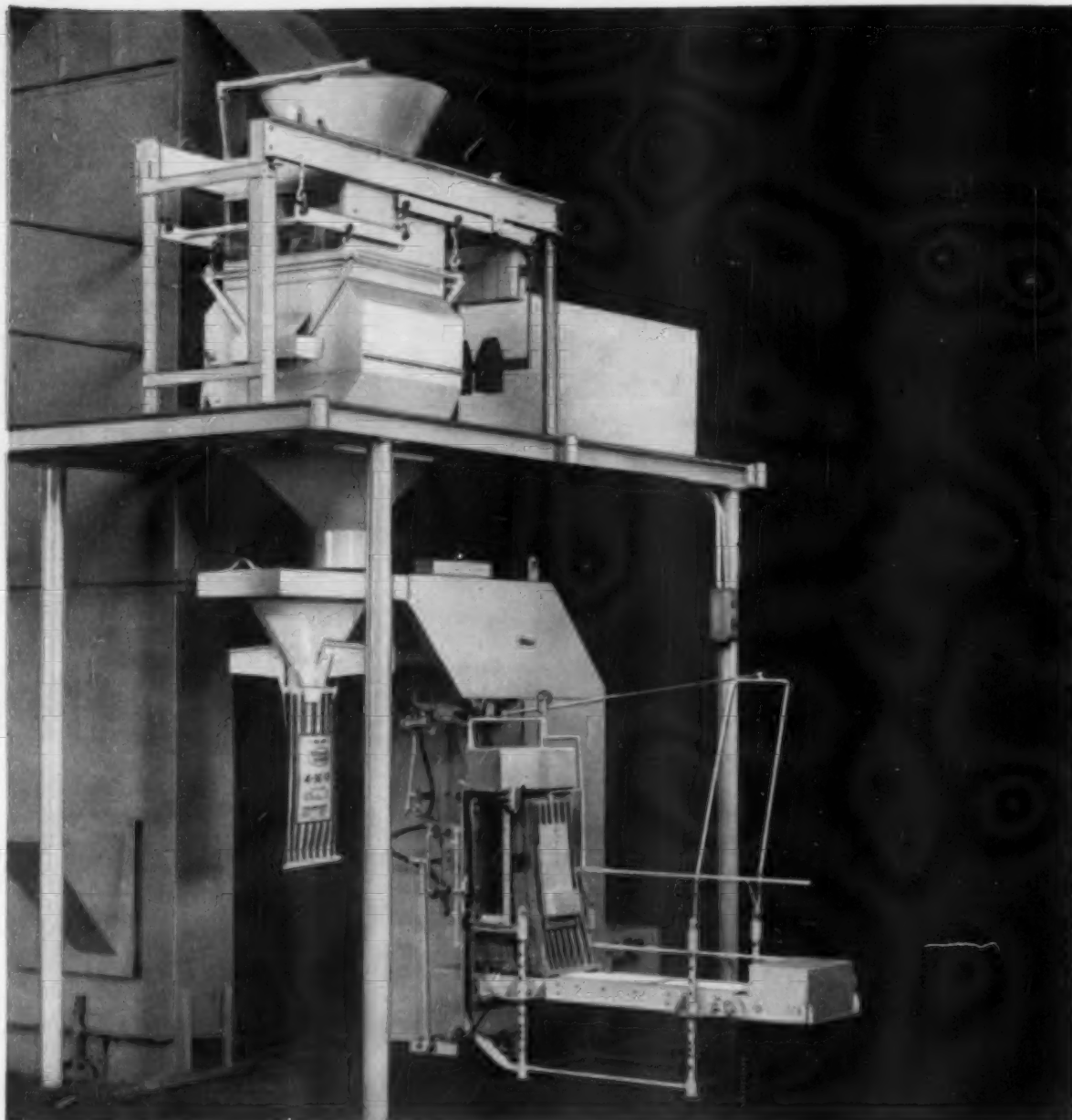
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Automatic bag placing and filling . . . shown here is the Raymond Bag Packer (top half of photo) and the Raymond Bag Placer (bottom)

## INDUSTRIALLY PROVEN... *the Raymond Combination*



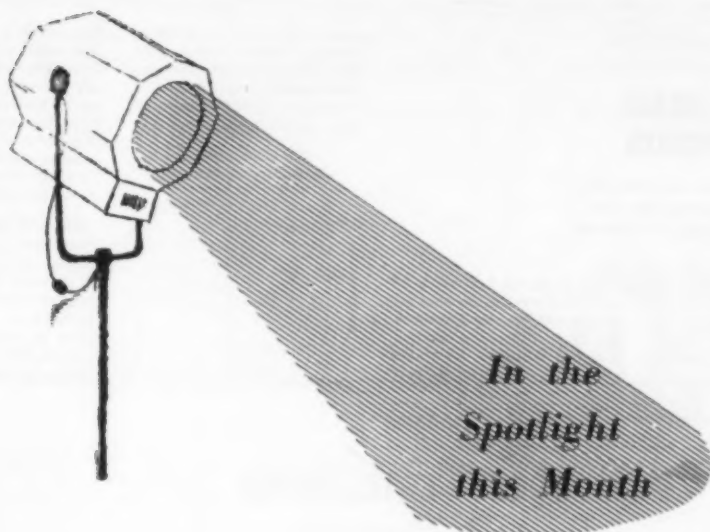
**BAG CORPORATION**  
Middletown, Ohio

A Division of Albemarle Paper Mfg. Co.

### ROTOMATIC BAG PACKER—BAG PLACER

Here's a proven step towards automating your packing line. The Raymond combination Bag Placer and Bag Packer will automatically hang bags on packing spout and fill them at the rate of 25 bags per minute . . . proven in full production line operation. The development of the Raymond Bag Placer, which is designed to operate with all open mouth packing equipment, is another step forward towards completely automatic bag placing, filling and closing operations. For details on the Raymond Packer Placer combination or separate units, contact your nearest Raymond Representative or write

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- **NAC Meeting** . . . Speakers at the 28th annual meeting of the National Agricultural Chemicals Association discuss a challenging set of alternatives currently facing pesticide producers. Page 16.
- **Symposiums on Sales** . . . Too much of the sales effort in the fertilizer industry is concerned only with selling a certain amount of product at a particular price, with far too much emphasis placed on price. IMC offers a selling approach that substitutes a complete fertility program for price. Page 19.
- **Antiresistant DDT** . . . A new form of DDT, exhibiting unimpaired effectiveness against insect pests that have developed resistance to conventional DDT and other chlorinated hydrocarbons, has been undergoing extensive tests. Page 21.
- **Fertilizer Solutions Meeting** . . . The importance of raising the grade of liquid fertilizers and more effective sales efforts by dealers are among topics discussed at the annual convention of the National Fertilizer Solutions Association. Page 25.
- **Fertilizer Industry Round Table** . . . Materials handling is the theme of the 1961 Fertilizer Industry Round Table. Panel discussions cover handling of solutions, bulk solids, and multiwall packages. Part one of a two-part report. Page 28.
- **Face Fly Symposium** . . . A special panel at the annual meeting of the Canadian Manufacturers of Chemical Specialties Association sees the face fly as the greatest problem faced by dairy and cattle men since the hornfly of the 1890's. Page 39.
- **New Olin Laboratory** . . . Olin Mathieson research personnel are studying a new pesticide for the control of houseflies at the company's new research laboratory in New Brunswick, N. J. Page 43.

## Trade Listing

National Agricultural Chemicals Association. Association Building, 1145 19th St. N.W., Washington, D. C. Lea Hitchner, president.

National Plant Food Institute, 1700 K St. N.W., Washington, D. C. Paul Truitt, president.

American Potash Institute, 1102 16th St. N.W., Washington 6, D. C. H. B. Mann, president.

American Society of Agronomy, 2702 Monroe St., Madison, Wisc. Dr. Matthias Stelly, exec. sec.

American Phytopathological Society, S. E. A McCallan, secretary, Boyce Thompson Institute, Yonkers, N. Y.

American Chemical Society, 1155 16th St. N. W., Washington, D. C.

Association of Official Agricultural Chemists, P. O. Box 540, Benjamin Franklin Station, Washington, D. C. William Horwitz, secretary-treasurer.

Agricultural Ammonia Institute, Hotel Claridge, Room 305, Memphis, Tenn. Jack Criswell, executive vice-president.

American Society of Agricultural Engineers, F. B. Lanham, secretary, 505 Pleasant St., St. Joseph, Mo.

Carolinas-Virginia Pesticide Formulators Association, 516 S Salisbury St., Raleigh, N. C. J. C. Whitehurst, Jr., secretary-treasurer.

California Fertilizer Association, Sidney Bierly, executive secretary, Room 213, Ochsner Building, 719 "K" Street, Sacramento, Calif.

Chemical Specialties Manufacturers Association, 50 East 41st St., New York City. Dr. H. W. Hamilton, secretary.

Entomological Society of America, 4603 Calvert Rd., College Park, Md. R. H. Nelson, secretary.

National Fertilizer Solutions Association, Room 901, Jefferson Bldg., Peoria, Ill. W. Harold Schelm, exec. sec.

National Cotton Council, P. O. Box 9905, Memphis, Tenn.

Soil Science Society of America, 2702 Monroe St., Madison, Wisc. L. G. Monthey, exec. sec.

Sulphur Institute, 1725 K St. N.W., Washington 6, D. C. Dr. Russell Coleman, president.

Weed Society of America, W. C. Shaw, secretary, Field Crops Research Branch, Beltsville, Md.

Western Agricultural Chemicals Association, Charles Barnard, executive secretary, 2465 Kenwood Ave., San Jose, Calif.



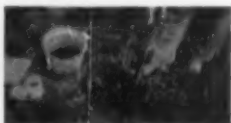
## FILLING THE NEED FOR PHOSPHORUS

American Cyanamid Company completes the phosphorus story with facts about the need for—and the results of—phosphate fertilization

The October and November reports explained why phosphorus is an indispensable plant food; phosphorus fixation and how to make it work for you; why yearly phosphorus fertilization is needed by most crops.

This final report locates areas of phosphate deficiency and shows how crops respond to phosphate fertilization.

**We're using up the phosphates reserves in our soils**  
Each year an average of about 3 lbs. of phosphorus is removed from U.S. soils for each 2 lbs. returned.



To learn how much phosphorus your soil needs, you must know how much they have. Soil testing is the way to find out.

This deficit is consistently greater in some soils. For example, most pastures receive only a fraction of the phosphorus they need... If they get any at all. On the other hand, intensively cultivated crops such as vegetables, tobacco, and potatoes, get more than they can use.

This over-fertile crops over make a surprising response to phosphate fertilizer. Other crops! A can explain this.

**How phosphorus get the Early American virgin soils**

If you missed these reports...

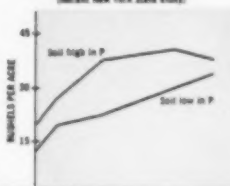
phosphorus, soon learned that phosphate fertilization increased yields. By 1900, phosphates had become the major fertilizer used.

After decades of fertilization and cropping, many—but not all

trated in the top few inches of soil. This encourages shallow rooting and retarded growth in dry years. Efficient production demands adequate available phosphorus throughout the root

never seen a pound of phosphate fertilizer. Forage crops respond as much as cash crops, and often give a greater return per dollar invested in phosphorus, other plant nutrients, and lime.

HOW GRAIN RESPONDS TO PHOSPHORUS AND LIME  
(Recent New York State study)



phosphorus is "fixed" soils after application. But, when soils are properly managed, fixed phosphorus can be made available. Thus, like money in the bank... but can be released to increased income — just capital investment.

**Where do we go from here?**  
Production is growing efficient through contribution of all phases of agricultural crop varieties, irrigation management, etc. However, the chain is no stronger than its weakest link. Efficiency is limited by the weakest management.



## PHOSPHORUS FERTILIZATION

American Cyanamid Company presents facts which will help you with phosphate fertilization

Last month's report explained why phosphorus is the "indispensable" plant food; why only a small part of the phosphorus in your soil is usable by crops as plant food; how phosphorus quickly becomes "tied up" or "fixed" by forming compounds from which phosphorus is unavailable to most plants; and what you can do to make the phosphorus in your soil more available to your crops.

The present report discusses phosphate fertilization — when and how to apply phosphate fertilizers.

ply is used during the year of application.) As total phosphorus in the soil increases, so does the amount that is available to your crops... if you manage your soil properly. Eventually, enough phosphorus can accumulate so that the amount converted from the fixed forms will be enough to supply a good share of the annual crop needs. Where, before, larger amounts of phosphorus fertilizers had to be applied to get enough available phosphorus to crops, now smaller amounts will do, because much of the phosphorus requirement will come

tration of available phosphorus to get crops off to a good start. Later, when root systems are better developed and able to absorb more phosphorus, the crops will be able to get enough phosphorus from these well-supplied soils.

### Timing and placement of phosphorus fertilizers

Phosphorus fertilizers are applied to increase available phosphorus for the coming crop and to build up the total phosphorus in soils with low phosphorus reserves.

Available phosphorus is quickly fixed in many soils. In

tilizers in bands. By using the fertilizer as phosphorus is not as easy as when mixed throughout. Also, crop roots reach phosphorus more quickly of the fertilizer is placed near the young plants. Placement is more important in acid and other "high-low" in phosphorus.

On the other hand, stay in for two years must have their own supply by top dress phosphates top-dress surface of the soil 2 inches or two of the soil move into the root zone, for hay and pasture such as alfalfa and it is important to apply amounts of phosphate them into the plow soil when the seed is sown. This extra supply



## PHOSPHORUS...

American Cyanamid Company explains the problem of getting enough of this indispensable plant food... and what to do about it

Every crop needs nitrogen, phosphorus, potassium, and other elements. Each crop needs these elements in a certain proportion. Different soils supply differing amounts of these plant foods. Therefore, the amount to be supplied by fertilizer will vary, depending on soil type, the amount of plant food already in the soil, and other factors. That's why fertilizer manufacturers offer such a wide range of mixed fertilizers. American Cyanamid Company believes the best way to get the most from your fertilizer program is to understand each plant food... what it does and how to use it.



Numbers tell percentages of nitrogen, phosphorus ( $P_2O_5$ ), potash ( $K_2O$ ) in mixed fertilizer. The ratio depends on crop need and amount of nutrient in soil. Article discusses problem of phosphorus fertilization.

This is the first of three articles\* in which Cyanamid presents

has a different job and a deficiency of each produces its own special symptoms.

When plants don't get enough phosphorus, growth slows; roots are stunted and not properly branched; blossoms, fruits and seeds don't develop properly. Yields are low, and often maturity is delayed.

In livestock, phosphorus is part of many body processes, such as conversion of feed to energy and formation of strong bones and teeth. Animals on phosphate-deficient feed and forage develop depraved appetites (they will actually chew bones), and will dissolve phosphorus from their own bones to supply enough for other body functions.



Purpling of leaf edges reveals serious phosphorus deficiency. Growth and fruiting are slowed, yields cut long before these symptoms show up.

plants can't take up sufficient nitrogen or potash for high yields.

Another way in which phosphorus increases availability of nitrogen is in legumes. Legumes take free nitrogen from the air and convert it to plant food... if they are first supplied sufficient phosphorus!

**Why phosphorus fertilization is a problem**

There's an average of 1000 lbs. of

Plant roots take up most of their nutrients from the soil solution. That means most plant food entering the roots must be dissolved in soil water. Yet, over 99% of all phosphorus in the soil is insoluble in water. It is part of many complex compounds and has become "tied up" or unavailable to plants. Soil scientists call this process "phosphate fixation." Less than 1% is phosphorus that is readily available to plants!

### How phosphorus is "tied up"

Phosphorus is a very "active" element. That's why it's never in pure form in nature, and why it so quickly forms many complex compounds with other elements in the soil. If you handle your fertilizer and soil building program properly, you can actually make available more of the phosphorus "tied up" in the soil or applied in fertilizers. If you mis-handle soils and fertilizers, you can speed phosphorus fixation. While you can legitimately consider "tied up" phosphorus as "stored" in the soil, it can be released only by proper management.

### What is to make more phosphorus available

Here are some of the things you can do to make available more of the phosphorus you already have... and that which you add in fertilizers.

**Liming** — A most important factor



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These fertilizer manufacturers use  
Cyanamid phosphate products\* in  
their quality mixed fertilizers:

Local and regional fertilizer manufacturers are  
linked to this program by a listing in the last column  
of each advertisement. These advertisements will be  
put into booklet form, and made available for distri-  
bution by manufacturers and dealers. If you wish a  
supply, please write for details.

## A FERTILIZER PROMOTION PROGRAM OF MAJOR IMPORTANCE TO THE INDUSTRY

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**PHOSPHORIC ACID**— This high-  
analysis, liquid phosphate is be-  
ing used in increasing amounts  
by manufacturers of high-analy-  
sis fertilizers. Direct application  
uses also are being developed.

There are other sources of  
fertilizer phosphates, but they  
are less widely used.

### Which phosphate fertilizer should you use?

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Most likely, most of the phos-  
phate fertilizers you apply to feed  
your crops will be mixed ferti-  
lizers, rather than straight phos-  
phate materials. The analysis of  
the fertilizer you buy is shown on  
the bag or attached tag. The  
important thing to you is the  
amount of available phosphate  
the analysis guarantees (usually  
given as  $P_2O_5$ ). The source makes

These fertilizer manufacturers use  
Cyanamid phosphate products\* in  
their quality mixed fertilizers:

too alkaline, unavailable com-  
pounds are formed with calcium.

Soil acidity is measured on  
the "pH scale" from 1 to 14. As  
the soil pH goes below 7, soils are  
acid; higher than 7, alkaline. The  
ideal pH range for most crops  
is from 6 to 6.5. In this range,  
phosphorus is most available.  
Thus, in highly acid soils, liming  
alone increases the phosphorus  
available to crops.

**Organic matter**—Liming re-  
leases phosphorus in another  
way. Some unavailable phos-  
phorus compounds are "organic."

These fertilizer manufacturers use  
Cyanamid phosphate products\* in  
their quality mixed fertilizers:

PHOSPHATE CONTENTS IN REPRESENTATIVE CROPS		
CROP	YIELD PER ACRE	USE OF $P_2O_5$ REMOVED
BARLEY (Spring)	100 bu.	25
BARLEY (Winter)	3 tons	15
WHEAT (Spring)	40 bu.	25
WHEAT (Winter)	1.5 tons	15
BARLEY (Spring)	80 bu.	25
BARLEY (Winter)	7 tons	15
ALFALFA	4 tons	45
BERMUDAGRASS	7 tons	25
Timothy	2.5 tons	25
CLAMBER	25 tons	25
POTATOES	400 bu.	25
TOMATOES	15 tons	25
COTTON (Seed and straw)	1000 lbs.	25
CORN (Seed & straw)	2000 lbs.	15

These organic compounds in crop  
residues are constantly being  
broken down by bacteria, and  
this process releases soluble  
phosphorus. Bacteria are not  
very active in acid soils. Lime re-  
duces acidity, increases bacterial  
activity and thus the supply of  
available phosphorus.

The plow-down of cover crops

products:  
phosphate Rock  
Superphosphate  
economical  
high-analysis

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Princeton,  
American  
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In these three advertisements—  
appearing in *Farm Journal* and  
*Progressive Farmer*—American  
Cyanamid Company sets forth  
the role of phosphorus, and ex-  
plains how best to handle soils  
and fertilizers for adequate phos-  
phorus nutrition.

As a major producer of phos-  
phates for fertilizer, we're mind-  
ful of two important facts: *One*  
—the prosperity of the entire  
agricultural community, includ-  
ing its suppliers, depends on how  
well America's land is farmed;  
*Two*—America's phosphate re-  
serves are *not* inexhaustible. Cy-  
anamid hopes these reports will  
contribute to both *sufficient* and  
*efficient* use of phosphates in a  
well-balanced fertilizer program.  
The advertisements are summed  
up this way: "Use enough pounds  
of fertilizer...and get the most  
from every pound you use."

We believe that only *methodi-  
cal* effort to increase general un-  
derstanding of fertilizers can  
bring total fertilizer usage up to  
*recommended* levels.

American Cyanamid Com-  
pany, Agricultural Division,  
Princeton, New Jersey.



CYANAMID SERVES THE MAN WHO  
MAKES A BUSINESS OF AGRICULTURE

Chief Kay-Two-Oh and the Pee-Cee-A tribe have but two products: potash and service. The Chief feels that an important part of this service is to remind customers that January 31 is the last day on which potash can be shipped at lower prices under the graduated price scale. ☐ "Order now. Save heap much wampum," says the Chief. ☐ Canny buyers

know that it's good business to plan ahead and keep warehouses full of Pee-Cee-A products. The motto of good Scouts, both Boy and Indian, is: "Be prepared!"

For fast service, phone, write or telex us at:

Phone New York **LT 1-1240**

TWX New York **NY 1-5386**



## POTASH COMPANY OF AMERICA

CARLSBAD, NEW MEXICO "AMERICA'S CHIEF SUPPLIER OF POTASH"



General Sales Office: 630 Fifth Avenue, New York 20

Midwestern Sales Office: First National Bank Building, Peoria, Ill.

Southern Sales Office: 1776 Peachtree Building, N.E., Atlanta, Ga.

Canadian Sales Office: 2 Carlton Street, Toronto 2, Ontario

PCA Standard 60% Muriate of Potash

PCA Coarse 60% Muriate of Potash

PCA Granular 60% Muriate of Potash

Potassium Chloride (99.9% KCL minimum)

Sulphate of Potash

## MEETING CALENDAR

Dec. 4—Minnesota Soils & Fertilizer Short Course, Institute of Agriculture, St. Paul, Minn.

Dec. 4-5—Illinois Turfgrass Conference, University of Illinois, Urbana, Ill.

Dec. 5-7—National Aviation Trades Association, Annual Meeting, Statler-Hilton Hotel, Washington, D. C.

Dec. 7-8—Michigan Fertilizer & Lime Conference, Kellogg Center, Michigan State University, East Lansing.

Dec. 11—Washington Liquid Fertilizer Dealers Association, Third Annual Meeting, Davenport Hotel, Spokane, Wash.

Dec. 11-13—Carolinas-Virginia Pesticide Formulators Association, Annual Convention, Carolina Hotel, Pinehurst, N. C.

Dec. 12-13—Empire State Soil Fertility Association, Winter Meeting, Cornell University, Ithaca, N. Y.

Dec. 13-15—American Society of Agricultural Engineers, Winter Meeting, Palmer House, Chicago.

Jan. 3-5—Northeastern Weed Control Conference, Hotel New Yorker, New York.

Jan. 4-5—Wisconsin Pesticide Conference with Industry, Wisconsin Memorial Union Building, University of Wisconsin, Madison.

Jan. 10—Fertilizer Dealers Short Course and Fertilizer Industry Representatives Conference, Memorial Union, Iowa State University, Ames, Iowa.

Jan. 15-16—Pesticide School, North Carolina State College, Raleigh, N. C.

Jan. 16-17—4th Indiana Pesticide Conference, Purdue University, Lafayette, Ind.

Jan. 16-17—5th annual Nebraska Fertilizer, Machinery, and Chemical Exposition, Lincoln Pershing Auditorium, Lincoln, Nebraska.

Jan. 17-19—Southern Weed Conference, Hotel Patten, Chattanooga, Tenn.

Jan. 18-19—Arizona Aerial Applicators Assn., Safari Hotel, Scottsdale, Ariz.

Jan. 23-24—Annual Fertilizer Short Course, South Dakota State College, Brookings, S. D.

Jan. 23-25—California Weed Conference, Hotel Sainte Claire, San Jose, Calif.

Jan. 25-27—California Aerial Applicators Assn., Hotel El Mirador, Palm Springs, Calif.

Jan. 26-28—National Cotton Council, Annual Meeting, Roosevelt Hotel, New Orleans, La.

Feb. 8-9—11th Annual Aerial Applicators Short Course, Cornhusker Hotel, Lincoln, Nebraska.

Feb. 13-14—Aquatic Weed Control Society, 3rd Annual Meeting, La Salle Hotel, Chicago, Ill.

Feb. 14-15—Alabama Pest Control Conference, with meeting of Alabama Association for Control of Economic Pests, Auburn University, Auburn, Alabama.

Feb. 15-16—Annual Joint Meeting of Midwest Agronomists & Fertilizer Industry, Edgewater Beach Hotel, Chicago, Ill.

### Barden Clay Quiz



### DO YOUR DUSTS HAVE GROUND ROLL?

Ground or plane dusts made with Barden Clay develop a "ground roll" covering the underside as well as the upperside of the leaf. Use Barden's low bulk density to modify heavy and abrasive diluents for maximum quality and best performance at low cost. Barden is the industry's kaolin standard for a carrier-diluent in wettables and dusts; for an anti-caking conditioner in prilled fertilizers, and 93-94 percent sulfur.

These Barden features make it superior for all formulations: lowest abrasion...better sticking...high bulking value...greater uniformity...better deposits...maximum economy...superior wettables.

Working samples on request.

J. M. HUBER CORPORATION

630 Third Ave., New York 17, N. Y.



Wise owls read Huber Technical Data. Ask to be put on our mailing list.

### FOR DUST OR SPRAY USE BARDEN CLAY

The Low-Cost Scientific Diluent



Interested in 75% Wettables and Concentrates? Zeolex 7A is the new synthesized carrier for top results. It's versatile, too: serves as a bulking agent, and as a static-free conditioner for 99 percent sulfur grinding. Write for more information.



**H. B. TATUM**  
*Director, Technical Service*  
Tampa, Florida



**R. D. GRAF**  
*Technical Service Representative*  
Minneapolis, Minn.

**YOU'RE  
THE BOSS —**

**WE WORK FOR YOU!**



**J. B. BOYD**  
*Technical Service Representative*  
Dallas, Texas



**R. L. HALL**  
*Technical Service Representative*  
Lynn, Indiana



**O. A. NILES**  
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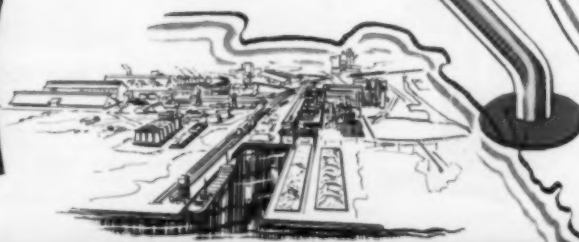
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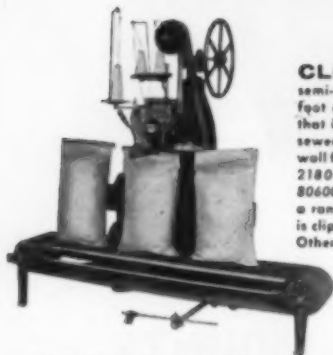
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# What are Your **BAG CLOSING PRODUCTION REQUIREMENTS?**



**TAPE BOUND CLOSURES?** Here is a semi-portable unit (left) with a 3-foot conveyor and the sewing head that is standard wherever bags are sewed. For binding the tops of multi-wall filled bags. Conveyor unit, Style 21800 M, and sewing head, Style 80600 H, adjust vertically to handle a range of bag sizes. Tape binding is clipped automatically at bag ends. Other length conveyors available.

## NEED TO CHECK-WEIGH?

This machine (right) is designed for closing bags on a platform scale; also available for use over floor scale. One person can fill, weigh, and close bags where production is limited. New high speed sewing heads in Class 53600 available for closing either textile or paper bags. For platform scale, specify Style 20200 M; for floor scale, Style 20200 P.



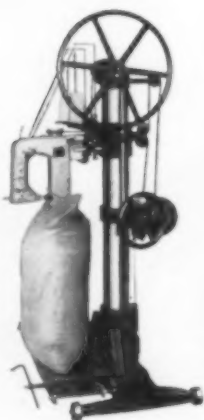
## YOUR OWN CONVEYOR SYSTEM?

This heavy-duty, fixed-base column Style 20100 M (left) is designed to fit in with your custom-built conveyor system. Takes Class 80600, 53600, or 60000 sewing head. Sewing head is adjustable vertically and is driven independent of conveyor.



## LIMITED PRODUCTION? ADDITIONAL PRODUCTION?

Here is a practical all-around machine (right) that is ideal for the smaller plant with limited production requirements; also used extensively to supplement regular production in large mills. It is readily portable; has a "floating" bag carrier that returns to loading position automatically. Units available for use with either Class 53600 or Class 80600 sewing heads. Bag carrier and sewing head adjustable vertically to handle variations in bag sizes.



**N**O two jobs are exactly alike — that's why Union Special builds a wide variety of bag closing equipment. In the Union Special line you will find machines for closing all sizes and kinds of bags from small textile or paper bags of one pound, or less, up to the largest jute and multi-wall paper bags in use today.

Coupled with this broad line of equipment is Union Special's long background of experience and technical know-how that insures customers of getting **THE RIGHT MACHINE FOR THE JOB!**

Union Special sewing heads for closing bags are also widely used by makers of specially designed filling, packaging, and automatic handling equipment. Union Special is always glad to cooperate with builders of special production equipment. Union Special representatives, located in all leading industrial centers, are qualified to give you expert recommendations.

Ask for Bulletin 200.

## SEWING HEADS FOR EVERY PURPOSE!



**CLASS 53600—** For closing light and medium weight cotton, burlap, and up to 3-ply paper bags with plain sewed closure. Makes Type 401 Double Locked stitch, with two threads, but can be fitted to make Type 101 chain stitch with single thread.



**CLASS 80600—** Heavy duty, high production sewing heads for closing medium to heavy textile and multi-wall paper bags with plain, folded over, or tape-bound closure. Choice of styles. Stitch Type 401 or Type 101.



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## EDITORIALS

THE failure of the pesticide industry to do an adequate job of getting the true facts on pesticide use across to the general public was sharply highlighted in an address by Dr. George R. Ferguson, chairman of the board of NACA, at the recent annual convention of the organization. He pointed out that farmers generally have only a chance or random chemical knowledge of pesticides. To this, he might well have added that dealers and applicators, too, often have only scant knowledge about pesticides, and this lack can be laid squarely at the door of the pesticide industry.

One of the obvious results is the continuing poor "press" which insecticides and herbicides receive. The latest example is a series of inflammatory articles in, of all publications, the *Police Gazette*, following similar unfavorable publicity recently in much more highly respected publications such as the *New York Times* and the *Saturday Evening Post*.

One thing we fail to understand about the whole business is why the pesticide industry should be surprised about these unfortunate developments. The truth is that very little has ever been done to create a favorable industry image in the mind of the public. The NACA has tried earnestly, but it is too much to expect that they can do an adequate job of defending the industry, let alone take a publicity offensive, without real money to spend.

We have heard the industry urged on many occasions to take a positive rather than a defensive attitude in telling of the major contribution that pesticides have made to boosting living standards in America. It should certainly be well worth while to remind the tremendous number of city dwellers who simply take our giant agricultural production for granted that this vast supply of food, at a minimum cost, would not be possible without the contribution

that pesticides make. But, positive or defensive, any publicity program takes money, — and money the pesticide industry has never been willing to spend. As a direct result, it has had and currently is facing a very bad press, and the threat of further restrictive legislation.

The answer, we have felt for some time, is that NACA should be given the funds to finance a real publicity program. As a first step in that program it would certainly be a dramatic move to grow a crop of wormy, fungi-scarred apples of the type that used to be accepted as normal thirty or forty years ago, and ship a basket to every food faddist and phony nutritionist who keeps talking and writing about growing "natural" foods, without use of dangerous chemicals through the application of "organic" principles. Such a campaign would cost some money, but it is the type of dramatic, positive publicity the industry needs to counteract the insidious scare articles which have recently been directed against it.

THE fertilizer industry is to be commended for its sensible handling last month of the Agency for International Development's proposal to open a foreign aid purchase of fertilizer to bids from foreign suppliers. Although the proposal involved less than \$7 million worth of fertilizer, it might have set a precedent that could affect \$75 to \$100 million in fertilizer grants to underdeveloped countries.

The industry, led by a group of six producers and one shipper, protested the change in policy, pointing out that AID is not familiar with the problems of the American fertilizer industry (one advantage foreign bidders have over U. S. firms is that they don't have to use American-flag ships; U. S. bidders do). It was the pre-

(Continued on Page 70)

## Challenges Facing Producers Are Aired By NAC Speakers

The pesticide industry has not done an adequate job to date in telling the story about its products either to users or to those who influence their use. As a result, farmers have only a chance or random chemical knowledge of pesticides.

The contributions of chemistry to food production and pestilence control will go down in history among the few truly great advances of mankind. The industry, however, must see that the public health is protected from injury.

THE 28th annual meeting of the National Agricultural Chemicals Association was held at the Homestead, Hot Springs, Va., October 29-November 1. Theme of the meeting was "Progress or Complacency," and the program of talks built around this challenging set of alternatives to pesticide producers attracted a large and interested audience. P. J. Reno, manager of the Agricultural Chemicals Division of Hercules Powder Co., Wilmington, Del., served as chairman of the Program Committee and presided at the opening business session of the convention.

The meeting was marred only by the absence of the president, Lea S. Hitchner, who was forced to return to Washington because of illness, from which he has since recovered.

Officers of the association were re-elected for a second one-year term. They are: chairman of the board of directors, Dr. George R. Ferguson, president of Geigy Agricultural Chemicals; vice-chairman of the board, Herbert F. Tomasek, president of Chemagro Corp.; president, Lea S. Hitchner; secretary,

Jack Dreessen; and treasurer, Lee H. Grobe.

Five new members were named to the Board of Directors, all elected to serve a three-year term: Howard J. Grady, president of the Ortho Division of California Chemical Co., Richmond, Calif.; R. C. Harnden, president of Chapman Chemical Co., Memphis, Tenn.; Daniel J. Keating, vice president and general manager, Agricultural Chemicals Division, Stauffer Chemical Co., New York; C. D. Siverd, general manager of the Agricultural Division of American Cyanamid Company, Princeton, N. J.; and T. K. Smith, Jr., vice president, Monsanto Chemical Co., gen-

eral manager of Agricultural Chemicals Division, St. Louis, Missouri.

Among matters discussed at the business meeting was a proposal to adopt a new basis for the collection of dues. Ed Phillips, chairman of the Finance Committee, presented to the meeting a plan to base future dues payments on an established formula so that all members will know they are paying on an equitable basis, and on the same basis as other members. All members would be asked to submit reports on products they manufacture to a bank. The bank would then tabulate the figures and receive payments in confidence, after the rate of payment had been determined by the board. Basic pesticides manufactured by a member, or formulations containing active ingredients made by the company, would be assessed at full rate. Formulations containing purchased active ingredients would be charged at half rate. Export sales would be figured at one-half on the first category, and one-quarter on formulations from purchased ingredients. Maximum dues would be set at \$20,000 for any member, and the

### SPRING LAKE IN '62

The N.A.C.A. will hold its 1962 annual convention at the Essex and Sussex, Spring Lake, N. J., September 5-7. N.A.C.A. conventions were held regularly in Spring Lake until 1957 when the board adopted a policy of rotating the meeting site. Since then the N.A.C.A. has met at Savannah, Ga., in 1958, at French Lick, Ind., in 1959, and at San Diego, Calif. in 1960.



minimum dues for a formulator would start at \$300. No detailed reports would be asked for where sales are less than \$1,000,000 annually.

There was considerable discussion of the proposal to set a maximum dues figure, and a number of speakers indicated that they were opposed to establishing such a top limit. The matter was referred back to the board of directors for final action.



(Left to right) James D. Hopkins, Hopkins Agricultural Chemical Co.; Herbert F. Tomasek, Chemagro Corp.; Ivan A. Nestingen, under secretary of Health,

Education, and Welfare; George R. Ferguson, Geigy Agricultural Chemicals and chairman of the NAC board; and P. J. Reno, Hercules Powder Co.

## Industry Favors Necessary Legislation

A NUMBER of important problems that face the pesticide industry were considered by Dr. George R. Ferguson, chairman of the board of NACA, in his address opening the meeting. Dr. Ferguson, who is president of Geigy Agricultural Chemicals, Yonkers, N. Y., asserted that the pesticide industry has not done an adequate job to date in telling the story about its products either to users or to those who influence their use. A recent survey which he cited indicated that farmers generally have only a chance or random chemical knowledge of pesticides. "Until we can impart some knowledge and understanding of these pesticidal chemicals so that the farmer can get the 'feel' of them," he believes, "we will continue to have problems of misuse." Nor, in Dr. Ferguson's opinion has the industry done the job it should have done in keeping county agents and others whose advice influences the farmer informed on new pesticidal products.

In discussing legislation Dr. Ferguson reported that over the past year hundreds of measures have been introduced into the state legislatures of most of the 50 states pertaining directly or indirectly to the pesticide industry. Many of these have been restrictive or even punitive in nature. The pesticide industry, Dr. Ferguson asserted, favors all necessary legislation to protect the user, the public health and the safety of the food supply. It is opposed, however, to all unnecessary restrictive legislation and

regulation. As to the possible need for further legislation or regulation, Dr. Ferguson quoted the recent report of the Special Committee on Public Policy Regarding Agricultural Chemicals for the State of California, which asserted that the nation's food supply is completely safe and concluded that "no evidence is presently available that there is any danger of anyone being poisoned by pesticide residues in food."

Dr. Ferguson observed that one of the industry's current problems is encountered in obtaining clearance for use of products that leave "no residue." It is ironic, he pointed out, that it is apparently more difficult to obtain registration for a product that leaves no residue than it is for one that does leave a residue. Part of the problem is that there is no time limit under the Federal Insecticide and Roden-

ticide Act within which the Food and Drug Administration must act on petitions, and that Food and Drug has been so busy with petitions which do carry statutory deadlines that they have tended to postpone decisions on petitions under FIFRA. He called for an amendment to FIFRA to establish a statutory time limit within which the regulatory agency would be required to take action.

Dr. Ferguson also expressed industry dissatisfaction with treatment of the "no residue" question in the manual of registered pesticide uses. "Uses sanctioned by prior Miller Bill registration — even though residue data were not available — have not been differentiated from uses cleared on the basis of post-Miller Bill requirements where extensive data have been developed. Even though over five years have elapsed since the enactment of the Miller Bill, the USDA

(Continued on Page 78)

## Extension Agents And Public Relations

J. O. Rowell, extension entomologist, Virginia Polytechnic Institute, Blacksburg, Va., described the role of the extension entomologist as a public relations agent. By the very nature of his work, he pointed out, the extension entomologist is constantly in the public eye. It is thus highly important to him to serve as an effective public relations agent for the agency he represents, whether college or university, federal or state agency. Unless he can enlist public support

for whatever program is contemplated, the program is doomed to failure. The necessary first step is to secure the confidence of the public.

It is unfortunate, the speaker pointed out, that there is no adequate public relations machinery in operation in many of the state extension services, and many extension entomologists have to act as their own public relations agents (often without adequate training or experience).

Mr. Rowell suggested that the extension entomologist can enlist assistance in his public relations job from his fellow entomologists in research and in the educational field. It is essential, he urged, "that the research entomologists give freely to the extension specialists the results of their finished research, and that the extension specialists publicize the data accurately, without bias, and without an effort or an intent to 'pass the buck' on any controversial points in recommendations. By the same token, good public relations is fostered when the extension specialist gives to the research worker his considered suggestions for new needed research. One of the best gestures of good public relations between extension and research is the joint authorship of recommendations, team approach on radio and TV programs and joint understanding and agreement on news releases."

Mr. Rowell reviewed the efforts of the Entomological Society of America at the time of the 1954 centennial of entomology to make a contribution to a better public understanding of the important role of entomology. The society, concerned with an apparent lack of public understanding of the profession of entomology, made a concerted effort to carry to the American people the theme: "The American Public Today is the Healthiest, Best Fed and Best Clothed This World Has Ever Seen, In Large, Because of Entomological Effort."

### *Controls Are Adequate*

**S**PEAKING at the annual dinner, Ivan A. Nestingen, under secretary of Health, Education and Welfare, congratulated the pesticide industry on "a remarkable degree of success in promoting voluntary compliance with the pesticides amendment (to the Federal Food, Drug & Cosmetic Act) at the manufacturing level and also in educating the farmer on the safe and proper use of pesticides to avoid excessive residues on food crops."

Among the guest speakers at the NAC convention were: (left to right) J. O. Rowell, Virginia Polytechnic Institute; Willie Mae Rogers, Good Housekeeping Institute; and Mr. D. A. Spencer, U.S. Fish and Wildlife Service.



He observed that "the contributions of chemistry to food production and pestilence control will go down in history among the few truly great advances of mankind," but reminded his listeners that the pesticide industry has direct responsibility for seeing that in use of these powerful chemical tools the public health must be protected from injury and unwanted side effects on plant and animal wildlife must be avoided.

He emphasized that the basic principle behind the pesticides amendment to the Federal Food, Drug and Cosmetic Act is that "proof of safety must be available before a new chemical is tried out on the consuming public." He criticized the willingness of some pesticide manufacturers to defend their products with such phrases as "there is no evidence of injury to man" from their use. Such arguments evade the main point of the protective plan established in the law, he said. It is not enough merely to argue that there is no positive evidence of injury to the public health. The system "requires that there be positive evidence of safety before a chemical is introduced into our food supply, and it presumes the availability to the government of adequate technology and resources to make it work."

Regarding the volume of "alarmist" propaganda questioning the safety of the nation's food supply, Mr. Nestingen deplored such misinformation and pledged the help of the Department of Health, Education and Welfare in keeping the record straight. He characterized as faddism the "poisons in

your food" propaganda which seeks to capture an audience by the scare technique. On the basis of experience to date, he asserted, we have every reason to believe that our control system is accomplishing its purpose, — permitting us to enjoy the benefits of using pesticides, while still minimizing the risks which necessarily accompany their use.

### *The Woman's Angle*

**C**HEMICALS and food, from "The Woman's Angle," were discussed by Willie Mae Rogers, director of the Good Housekeeping Institute. Miss Rogers expressed concern over the fact that the expanding use of agricultural chemicals is threatened by a fear complex building up in the public mind. She urged pesticide manufacturers to give particular attention to the reputation of agricultural chemicals. Once a group of products acquires a reputation,—she said, that reputation will stick in the public mind, no matter how false it may be.

Miss Rogers then discussed the woman's role in purchasing foods, and her reactions to "residues on foods" as reported in the consumer press. Women, she said, are not objective,—they are direct, liberal minded, honest, and trust in American business. Miss Rogers urged getting the facts on pesticides to the buying public.

### *Chemicals & Wildlife*

**D**ONALD A. Spencer, biologist with the Wildlife Research Center, Denver, Colo., discussed the role of chemicals in wildlife

(Continued on Page 79)

## IMC Seminars Stress Service

**The best way for a dealer to develop permanent customers is for him to make sure that fertilizer buyers and users learn to look on him as their most convenient and dependable source of information on every question connected with fertilizer use.**

A PROGRAM of "year-around selling through service" was outlined to fertilizer manufacturers and mixers by representatives of International Minerals & Chemical Corp. at a series of seminars conducted by IMC personnel last month. The first of the seminars was held in Baltimore, and was attended by about sixty interested participants. Similar programs were scheduled later in the month, to be held in Raleigh, N.C.; Kansas City; Indianapolis; Toledo; Minneapolis; Macon; Dallas; and New Orleans.

IMC has emphasized the important role of service in selling for several years. They presented a formula (90-215-60) at this year's meetings to illustrate how time can and must be found for this service selling. The ninety refers to the normal spring selling season of three months; the sixty to the fall selling season; and the two-fifteen to the remaining seven months of the year, during which the fertilizer manufacturer, mixer or dealer actually has much more of an opportunity to develop the technique of selling through service. This being his dull period, he can better find time to work on the various services that will bring him permanent customers. And, IMC emphasizes, the best way to develop

permanent customers is to make sure that fertilizer buyers and users learn to look to you as their most convenient and dependable source of information on every question connected with fertilizer use.

Too much of the sales effort in the fertilizer industry is unfortunately concerned only with selling a certain amount of product—of such and such a grade—at a particular price, — with far too much of the emphasis placed on the price. IMC emphasizes a selling approach that wipes out the necessity of dealing on price alone, and instead substitutes a Complete Fertility Program that is designed to maintain the farmer's land constantly at the peak of its productive capacity. They urge that the farmer be counseled to think of his land as he thinks of his checking account at the bank. He can draw out only what he has put in, and if he persists in writing checks, without making any deposits, he is bound to wake up one day and find that his account is overdrawn.

The first step in selling the farmer more fertilizer is to enlarge his knowledge of what fertilizer is, and what it will do. Many farmers, of course, know very little of what fertilizer is, and what it will do for them. The extension of Fertilizer Knowledge opens up a large

possibility for expanded sales, and the one who has helped a farmer understand what fertilizer can do to make his farming operation more productive ordinarily has the inside track on supplying this buyer.

There are many ways in which the manufacturer can educate the dealer on the subject of fertilizer, and in which the dealer can advise the farmer. At the IMC clinics a number of these services were discussed, including soil testing, fertilizer demonstration plots, dealer or farmer meetings, maintenance of crop production records, etc. It was emphasized that all of these services can be used as excellent sales tools in a program of Selling through Service, year-around.

Only a small percentage of farmers, it was pointed out, actually make effective use of soil testing. It is probable that no more than 30 to 35% of the nation's farmers avail themselves of soil testing from any source, and many who receive soil test reports use them only to qualify for federal funds, then promptly forget them. Less than 10%, perhaps, are aware of the value or possible use of the tests they have had made. In many areas dealers are already handling soil testing for their customers. They recognize it as an invaluable sales tool that helps them develop a genuine understanding of the customer's needs. IMC speakers emphasized that the dealer "must take a personal interest and play an active part in helping the farmer want the tests, get the tests and interpret them correctly. If a man sees that you are interested enough in his particular situation to take

**The goal of the Fertility Planning Program is to keep the farmer customer's arable land continuously at the peak of its productive capacity. The dealer should be a plant food consultant—not a farm management consultant. That is the job of the County Agent.**

a hand in helping him analyze and solve his problems, he feels more confident in coming to you for that help."

Demonstrations and Test Plots, it was stated, are another valuable Service Selling technique which is not used nearly as often as it should be. The national average use of demonstrations, according to studies made by IMC, was only 10%, with over half of the agricultural areas in the country demonstrating for only 5 to 8% of their potential customers, and the others for only 9 to 14% of their customers. Yet demonstration plots can be exceptionally valuable as a sales tool, for it has been demonstrated over and over again in actual practice that putting before the customer actual evidence of the value of whatever it is he is being asked to buy is one of the best and surest ways to sell him.

A number of specific suggestions were advanced on conducting successful demonstration plots:

Locate the test on a well traveled highway where plenty of traffic flows regularly.

Post the plot well and clearly identify the tests with legible, informative signs.

Provide ample parking space and easy access to the fields.

Choose a level, well-drained field that allows easy walking.

Have rows side by side and well spaced.

Identify applications to be sure there is no mistaking each variation of treatment.

Be sure to get your customers out to see the demonstration.

Point out and explain the applications and the difference in conditions of the plants.

Note yield at harvest time and record the various comparative yields. Translate them into profit dollars at current market prices.

Another type of service explained at this year's seminars was the maintenance by the fertilizer mixer or dealer of Crop Production Records. Such records were described as a "fertility accounting system" which provides a complete picture of the value and benefits of the use of fertilizer. The Crop Production Record System suggested by IMC starts with a map of the farmer's acreage, with every crop field indicated and given a number. Soil tests are recorded by field number, so a record can be kept of the fertility of each field. As the season progresses, records are entered as to crop planted, number of acres, fertilizer applied, type and amount used, and total cost. At the end of the growing season the yield per acre and total yield from each field are indicated. Finally the sales return is entered, giving on a single form the complete picture of the crop production results for the year. In a consolidated record over a period of years, field rotation is recorded, and it is easy to keep track of the fertility pattern.

One of the great values of such a Crop Production Record System is that it provides the information needed to appraise the fertility of the soil and to determine the investment return on fertilization practices. The fertilizer manufacturer or mixer can aid his dealers with forms and information, showing them how to use the Crop Production Record System with their customers. The records give the fertilizer supplier and the farmer the specific and accurate

information needed in planning for the next year's fertilizer practices and needs. And, with the figures on the previous year's increase in yield, and higher profit from his investment in fertilizer right in front of him, this usually represents a big step in selling him more and higher grade fertilizer. Dealers also normally find that if they have introduced the system to a farmer, and helped him set it up, he will in nearly every instance be willing to have them make recommendations and assist in planning his fertilizer usage. "Once you have worked with a farmer for a period of a few years on his Crop Production Records," IMC points out, "you will find yourself in the position of being his personal fertilizer practices consultant, able to plan ahead with him on a long-range basis instead of from season to season."

In connection with dealer and farmer meetings, it was emphasized that, in order to have a successful meeting, there are normally three essentials: a live topic of real interest, that those who are expected to attend the meeting will readily recognize as of real value to them; personal promotion to ensure a good attendance (don't expect your dealers to do much to guarantee a satisfactory turnout); whatever the subject of the meeting, be sure to follow up with a personal call immediately, no later than the following week, while the idea is still fresh in their minds.

All of these isolated facets of fertilizer selling IMC speakers suggested should be blended into an all-around program of Fertility Program Planning, with the goal of keeping the farmer customer's arable land continuously at the peak of its productive capacity. This means, IMC points out in its booklet, "Time for Service Selling," that he must keep every acre of his arable soil in the finest possible condition for the growth of the specific crop he proposes to grow on it. "This isn't going to

*(Continued on Page 74)*



## Antiresistant Form Of DDT Is Successful In Tests With Flies

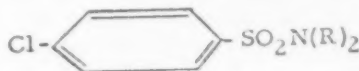
In field tests where fly populations exhibit more than 250 times the normal resistance to DDT, the antiresistant form of DDT controls them successfully. The duration of effectiveness depends largely on thoroughness of application. Good sanitation practices also are highly important. Most of the test work to date with antiresistant DDT has been against the house fly.

A NEW additive which, when combined with DDT, is effective against certain insect pests that have developed resistance to DDT, has been undergoing extensive tests during the 1961 season, both in laboratories and in the field.

Antiresistant DDT is reported to be highly effective against resistant house flies.<sup>1, 2, 3, 4</sup> The new insecticide (N,N-Di-*n*-butyl-*p*-chlorobenzenesulfonamide plus DDT) is covered by a patent issued to Israeli research chemist, Moshe Neeman.<sup>5</sup> The patent has been assigned to Wisconsin Alumni Research Foundation, Madison, Wis., who have named two licensees who will supply the material commercially, S. B. Penick & Co., 4161 Beck Ave., St. Louis, and General Chemical Division of Allied Chemical Corp., Morristown, N. J. Samples of Antiresistant DDT may be obtained from the licensees by interested

workers in insect control and by insecticide formulators.

The compound developed by Dr. Neeman has the following formula:



in which R is an *n*-alkyl radical having from 2 to 7 carbon atoms.<sup>3</sup> The butyl analog was selected for use in field trials, although other analogs were also found to be active. The chemical is believed to act as an inhibitor of the enzyme dehydrochlorinase.<sup>4</sup>

The term "Antiresistant" was coined by the Wisconsin Alumni Research Foundation in an attempt to describe the function of the material as closely as possible. The material, it was felt, should not be described as a synergist, for it does not seem to materially enhance the performance of DDT against DDT-susceptible or DDT-tolerant insects. The description of the material as an "Antiresistant" seemed more appropriate, since the chemical,

while noninsecticidal in itself, in combination with DDT gives acceptable kills of certain species of DDT-resistant insects.

One formulation has been registered by the U. S. Department of Agriculture—a 10/50 wettable powder (10% Antiresistant and 50% DDT)—for use in residual sprays to aid in the control of DDT-resistant houseflies. The formulation is registered for use in cattle sheds, hog barns, sewage disposal plants, etc.

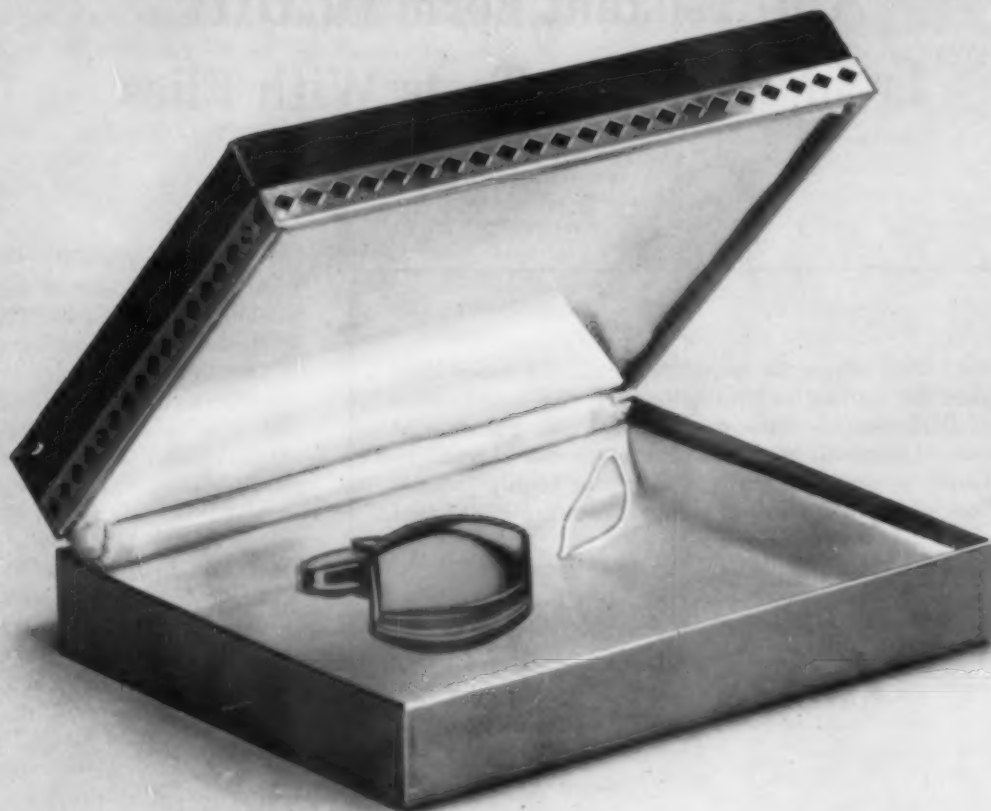
A preliminary report on the new material was released in December, 1960, to a selected group of entomologists to give them what information was available at that time. A second report, now being readied for release, supplements the previous data and gives more recent information accumulated in various laboratories and in the field in the course of test work during the 1961 season. Most of the test work to date has been against the house fly. The product has, it is reported, been tested against some other insect species by individual workers, but early results have been inconclusive and claims for control of insects other than the house fly must await the development of additional data.

Copies of the second report will shortly be available from the Wisconsin Alumni Research Foundation and the two licensees, S. B. Penick & Co. and General Chemical Division.

The Antiresistant is stated to be essentially non-toxic itself on the basis of test work performed

<sup>5</sup>U. S. Patent No. 2,974,083. Dr. Neeman, formerly a fellow at the Chemistry Department, University of Wisconsin, is presently on the research staff of Roswell Park Memorial Institute, Buffalo, N. Y.

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so far. Tests of its effectiveness against the house fly were conducted by a number of laboratories, including those at WARE, USDA Labs. at Orlando and Beltsville, at Rutgers University, at the research laboratories operated by Gulf Research & Development Corp., and at the Purina Research Farm at Gray Summit, Mo. Testing has also been conducted in the field. Laboratory tests have included Peet-Grady tests, wind tunnel tests and evaluation in the Barnhart and Waters spray towers. A full account of Peet-Grady tests performed at Beltsville by J. H. Fales and O. F. Bodenstein is carried in the November, 1961, issue of *Soap and Chemical Specialties*.

Field tests were conducted this past season in the vicinity of Orlando, Fla., by General Chemical, where fly populations were encountered which were extremely resistant to DDT. The Antiresistant form of DDT controlled them successfully. The general pattern of test results indicated satisfactory control of highly resistant house flies.

In field use against DDT-resistant house flies in sheds housing beef cattle and hogs, a number of conclusions were apparent. Excellent reductions of house fly populations were achieved with the Antiresistant DDT when the insecticide was applied at a dosage of 175 to 200 mg. DDT/ft.<sup>2</sup> The duration of effectiveness depended largely on thoroughness of application. It is recommended that, in applications, special attention be paid to overhead locations. Breeding sites should, of course, not be sprayed, to avoid possible build up of resistance in succeeding generations. Good sanitation practices are highly important. The effectiveness of the insecticide should be judged, not simply on number of dead flies visible, but rather on the basis of percentage reduction in fly population following application.

In field trials it was observed that in locations of heavy infesta-

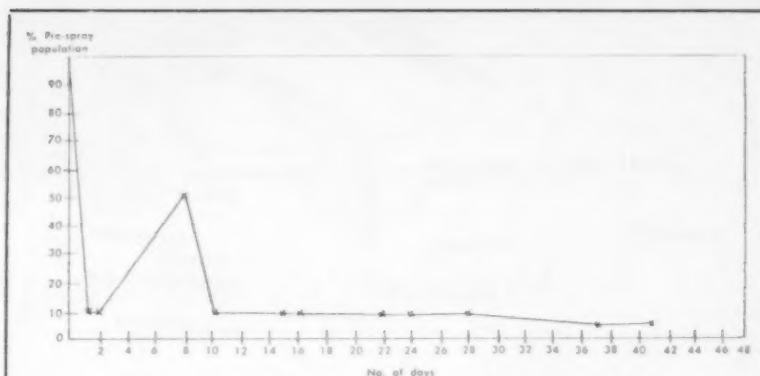


Fig. 1. Housefly control in cattle barn at Farm T, Dane County, Wis.

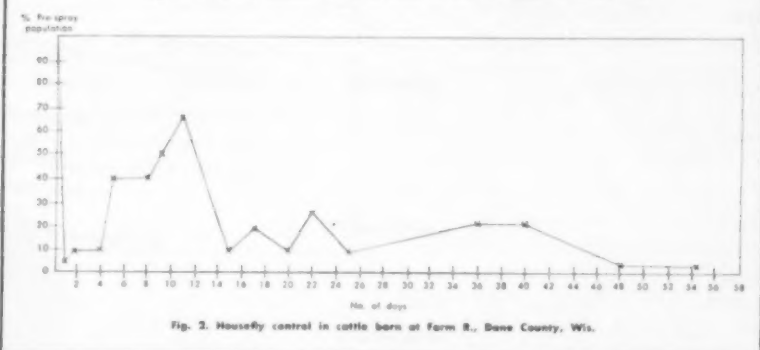


Fig. 2. Housefly control in cattle barn at Farm B, Dane County, Wis.

Figures 1 and 2 illustrate the immediate and sharp decline in fly populations after application of Antiresistant DDT. Fly breeding sites were plentiful in both premises, and the high rate of emergence from these sites apparently accounts for the subsequent temporary

rise in populations. Counts tapered off thereafter and remained at low levels until the tests were terminated. The temporary rise in populations shown at 8 to 10 days was not observed at locations where good sanitation was practiced.

tion, where fly breeding sites were plentiful, by far the greater number of newly emerged houseflies frequently had no contact with insecticide-treated surfaces until dusk, at which time they went into the barn to roost for the night. During warm days early in the trials, therefore, the newly emerged adult houseflies near untended breeding sites became extremely numerous. Under these insanitary conditions, desirable control levels were not reached and maintained until the emergence rate had been materially reduced, either through sanitation or through the disruption of the breeding cycle caused by the killing of adult houseflies prior to their mating.

On all sites it was found that control in the range of 90-95% was achieved within hours after application of Antiresistant DDT. In some trials, however, where ade-

quate sanitation was not maintained, fresh populations began to emerge within a few days, and a substantial and sharp increase in houseflies (up to 40 to 65% of pre-spray populations) was observed. Thereafter, populations fluctuated downward until desirable control levels were reached (80% or more reduction) and maintained for 5 to 8 weeks or longer. Figures 1 and 2 illustrate these observations.

On the other hand, where recommended sanitation practices were observed, Antiresistant DDT gave good control of houseflies in a short time and successfully maintained satisfactory control on a residual basis.

In addition to giving this dramatic improvement in performance of DDT, the Antiresistant also improved the performance of meth-  
(Continued on Page 70)



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## Speakers Stress Importance Of Suspension Fertilizers

**There obviously are some problems connected with the use of suspension fertilizers, but they don't appear to be insurmountable if enough fertilizer producers are interested in helping to work them out. Also, dealers are not doing as much as they could to merchandise liquid fertilizer solutions.**

IT is going to become more and more important in the future to raise the grade of liquid fertilizers, Archie V. Slack, chemical research supervisor, Tennessee Valley Authority, Wilson Dam, Alabama, told the annual convention of the National Fertilizer Solutions Association, October 30 to November 1, at the Edgewater Beach Hotel, Chicago. Mr. Slack said that the increase in grade can be accomplished through the use of suspension fertilizers.

Relatively few producers in the United States, he said actually are making and selling salt suspensions. Some of these, he added, are operating quite successfully, however. In the past two years, Dr. Slack pointed out, there has been increased activity in salt suspensions. He described various applying equipment that has been developed to handle the thick suspensions, such as the "Slinger" developed by Edw. J. Funk & Sons, Kentland, Ind. (see *Agricultural Chemicals*, July 1961, pages 22 & 25).

Among the advantages of suspensions listed by Dr. Slack are that higher grades are feasible with suspensions than with other liquid

fertilizers, trace elements may easily be added, and cold blending is simplified. A real need is developing, Dr. Slack declared, for trace elements. Liquid fertilizer producers, he added, are "hard put" to add trace elements, whereas suspension producers can add trace elements with no trouble.

Among the disadvantages of suspensions, he listed the cost of the suspending agent, the complicated plant operation, possible plugging of nozzles, the need for constant agitation, and erosion of equipment. Of these, Dr. Slack said that the need for agitation probably presents the major drawback. He said that a farmer can use suspensions in his own equipment if he has a means of stirring. However, he added, few farmers are so equipped. Dr. Slack said that he knows of no producers who sell suspensions directly to farmers.

In conclusion, Dr. Slack said that there obviously are some problems connected with the use of salt solutions, but they don't appear to be insurmountable. If enough producers are interested in helping to work out the problems, Dr. Slack said, the future of suspension fertilizers will be a good one.

### The Dealer's Role

Many dealers are not doing much of a job in merchandising the product of liquid fertilizer manufacturers, the association was told by Dr. Joe M. Bohlen and Dr. George M. Beal, professor of rural sociology and professor of economics and sociology, respectively, of Iowa State University, Ames, Iowa. The topic of their presentation was "The Dealer's Role in Fertilizer Sales."

The dealer is important, they pointed out. He is considered to be a reliable source of information by 96 per cent of farmers surveyed in Iowa. Seventy-nine per cent of Iowa farmers say that the dealer should be able to tell them how to apply fertilizer, and 60 per cent feel he should be able to tell them how much they should apply.

Farmers, they said, expect the dealer to provide more services than the dealer thinks he should provide for the farmer. It was brought out in the Iowa survey that farmers could optimally be using three times as much fertilizer as they presently are using. Among the reasons given by farmers for not using more fertilizer are: purchase cost, risk and uncertainty, lack of equipment, low return on dollar invested, difficulty in handling and applying, and a poor previous experience. Most of these objections, it was pointed out, stem from a lack of knowledge about fertilizer on the part of farmers. The rest (lack of equipment and handling and applying problems) can be overcome by a dealer willing to



**Top:** Looking over exhibits at NFSA conference rooms are: (left hand photo) L. W. Galloway, Davison Chemical Division, W. R. Grace & Co., Baltimore, Md., and Maurice H. Doane, Tryco Mfg. Co., Decatur, Ill.; (right hand photo) P. W. Williamson, Tokheim Corp., Ft. Wayne, Ind., and G. A. Burson, Cotton Producers Association, Atlanta, Ga.

**Bottom:** (left to right) B. N. Fenton, Imperial Chemical Industries, New York;

John L. Anderson, American Potash & Chemical Corp., Chicago; and Albert Stevens, Stam Nitrogen Service, Watsika, Ill. Also: William D. Schneider Sr., Barnes Manufacturing Co., Mansfield, Ohio; Mrs. Schneider; C. L. Webster, Barnes Mfg. Co.; L. E. Sullins, Sullins Farm Supply, Littlefield, Texas; and Marion W. Martin, Flo-Lizer Inc., Hebron, Ohio.

offer applying services. The dealer also can overcome the other negative attitudes because, Dr. Bohlen and Dr. Beal pointed out, they have a story to tell. The story is that fertilizer will bring more profit than any other thing the farmer could add to his farm.

One of the factors brought out by the Iowa survey that makes it difficult to get more dealers to devote more time to fertilizer sales is that very few of them have fertilizer as their major project line. Grain is the major product line of 36 per cent of the dealers in Iowa, and these dealers sell 40 per cent of the fertilizer. Feed and petroleum are other major product lines of dealers who sell fertilizer.

On the average, the fertilizer department accounts for 14.5 per cent of the total volume of business of fertilizer dealers in Iowa. The gross income from fertilizer sales ranges from \$500 to \$330,000 per year and gross profit ranges from \$110 to \$39,600. It also was brought out in the Iowa study that

most dealers do not really know whether they are making a profit from fertilizers or not. Mark-up charged by dealers ranges from one per cent to 35 per cent, with the average being 9.3 per cent. The average mark-up for all other goods sold by the dealers is 14.4 per cent.

#### Good Money Maker

When asked to classify the role of their fertilizer departments, 26 per cent of the Iowa dealers said that it is a good money maker. 31 per cent said it is an important customer service, while 26 per cent said it is just another service. 15 per cent said the fertilizer department is not a money maker, but is needed for competitive reasons.

The fertilizer business, itself, was classed as "excellent" by 27 per cent of the dealers queried. Five per cent said it has "great potential," 23 per cent said it is "average," and 31 per cent classified it as "poor." Other attitudes expressed by dealers included the thought by 71 per cent that the profit mar-

gin on fertilizers is inadequate, while 42 per cent of the dealers felt the dealer's role is no more than a seller of needed goods and services. A low knowledge of fertilizer and fertilizer use was indicated among dealers by the Iowa survey.

A summary of the dealers' attitudes toward fertilizers indicates that there is room for improvement. For instance, only ten per cent of the dealers "push" fertilizers (this group grosses three times the average); only 26 per cent exhibit high fertilizer knowledge; and only 45 per cent feel they should act as consultants on fertilizer use.

The Iowa professors revealed that 50 per cent of the dealers do not feel that they receive any help whatsoever from manufacturers and distributors of fertilizers.

When farmers were asked to complete the sentence "I wish my fertilizer dealer would . . .", 54 per cent of them said "provide more services and information on fertilizer and sponsor test plots and demonstrations." It is interesting to note, Dr. Bohlen and Dr. Beal said, that only 38 per cent of the farmers finished the sentence with "reduce prices."

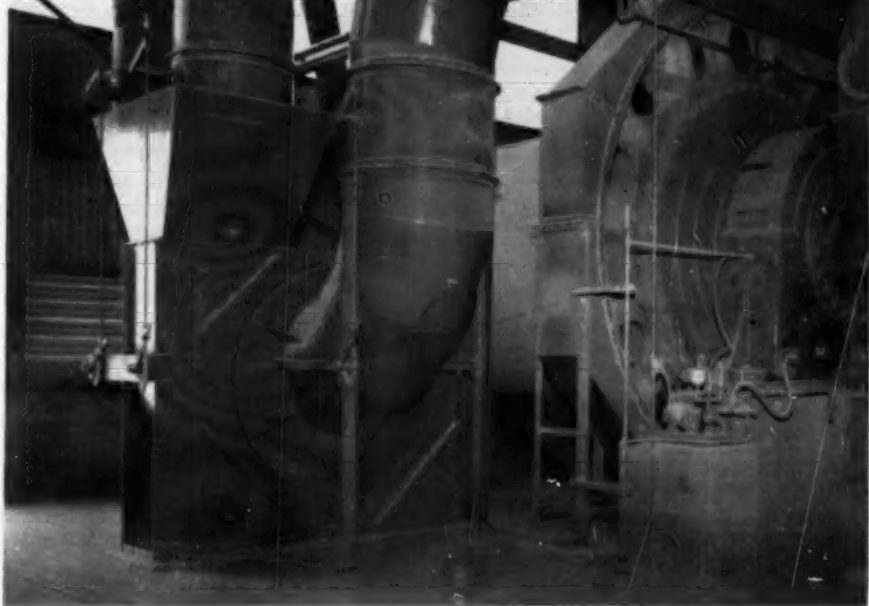
Farmers want more services than are being offered by dealers. For instance, 30 per cent of farmers want test plot demonstrations, while only six per cent of dealers offer them. Farmers also want soil testing, help in checking fertilizer results, and fertilizer clinics.

Among the conclusions quoted by Dr. Beal and Dr. Bohlen are that the dealer who is offering a service is the high volume dealer, and farmers who know the importance of fertilizer to farm income use the most fertilizer. Another interesting conclusion is that the dealers make the choice of the brand of fertilizer used by the majority of farmers. In fact, only 15 per cent of the farmers questioned said that they would change the dealer if he changed from the brand of fertilizer they had been using. The vast majority said that

(Continued on Page 77)

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This installation of the Davison Chemical Division, W. R. Grace & Company at Bartow, Florida, typifies industry's preference for Kennedy.



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## Materials Handling Gains Recognition As Vital Phase Of Fertilizer Production

Materials handling is being recognized as a very important phase of operations in a fertilizer plant—particularly since a review of movement of raw materials into a plant, storage, and movement of product out of a plant involves some 100 million tons a year.

It might be desirable to separate production from materials handling operations and, perhaps, create a position for a "Materials Handling Manager," whose responsibilities would include getting the right material to the right place at the right time in the right condition.

**F**ERTILIZERS have become more important to survival than any other form of energy, observed Dr. Vincent Sautchelli, in opening the annual meeting of the Fertilizer Industry Round Table, held November 7-10, Mayflower Hotel, Washington, D. C. Single phosphate, he pointed out is still used in greatest volume of the various fertilizer forms, however, it is steadily being replaced by the concentrated phosphates, as modern transportation costs become more critical in the profit picture of plant operations. Materials handling is being recognized as a very important phase of operations in a fertilizer plant,—particularly since a review of movement of raw materials into a plant, storage, and movement of product out of a plant involves some 100 million tons a year.

The theme of the 1961 Round Table meeting concerned "Materials Handling,"—and W. B. McClelland, secretary of the American Materials Handling Society, suggested to the audience of fertilizer plant superintendents and other fertilizer industry representatives that "materials handling management might offer more possibilities

for profit improvement in the plant food industry than production management." Mr. McClelland also suggested that it might be desirable to separate production from materials handling operations and perhaps create a position for a "Materials Handling Manager," whose responsibilities would include all activities having to do with getting the right material in the right quantity to the right place at the right time in the right condition. The scope of such duties, continued the speaker, should warrant sufficient importance to be on a same echelon as the production manager, whose responsibilities would then involve putting the product in saleable form.

### Handling Liquid Materials

In a panel discussion on transfer, storage and handling of liquids in the fertilizer industry, J. W. Lewis, E. I. duPont de Nemours, reviewed the physical characteristics of fertilizer ammoniating solutions and how these affect handling.

Defining the "salting out temperature" — sometimes mistakenly referred to as freezing point, Mr. Lewis stated, "if we take

any nitrogen solution and slowly drop the temperature, we will finally reach a point at which the solids present (ammonium nitrate, urea, or both) will start to come out of solution. The temperature at which these crystals first appear, i.e., the salts first begin to come out of solution, is defined as the salting out temperature. It would appear then, he continued, that we need only to keep the solution at or above the salting out temperature and eliminate all such problems. Actually, he said, there is one other precaution to be taken, and that is to prevent loss of free ammonia, —which loss will cause a rise in the actual salting out temperature. The cooling effect of expanding ammonia (in escaping) will cause a drop in temperature of the solution, — and should these two points come together, salting out will occur—if allowed to continue can plug the line.

Another troublesome physical property is vapor pressure. Many questions and problems arising in solution handling concern transfer of the liquids, bubbling in meters, etc., all of which are directly related to vapor pressure, reported the speaker. "Bubbling" results



when there is a difference between the vapor pressure of the solution and the external pressure,—and will continue until an equilibrium is reached. In metering, bubbling produces erratic readings,—and the only way to prevent this is to have adequate pressure on the solution as it passes through the meter..

In a liquid transfer system, such as is found in fertilizer plants, the installation and maintenance of accurate pressure gages will readily identify areas below pressure. Gages should be of the diaphragm type recommended for ammonia service, and the purpose of the diaphragm is to prevent salting out in the Bourdon tube, which would make the gage useless.

A well designed transfer system stated Mr. Lewis, will have a pressure gage on top of the storage tank; a thermowell with a dial thermometer in the solution line at the first elbow after leaving the tank; a pressure gage at the pump section and also the discharge, and a fourth gage in conjunction with a bulls-eye in the line between the meter and the flow control valve. The last gage in the system is the critical one. The pressure on this gage must always be above the vapor pressure of the solution if metering is to be accurate. Such a system, said Mr. Lewis, would save many hours of "downtime" to say nothing of the physical strain on the superintendent.

#### Transfer of High VP Solns

In reply to the question of "what is the best way to transfer high vapor pressure solutions?"—W. W. Whitlock, Texaco, advised that "air pressure is usually preferred in handling high pressure solutions. When using air, the most important factor is the maintenance of enough air pressure to keep the ammonia in solution at all places in the system where formation of gas would cause trouble. Air pressure must always be higher than the vapor pressure of the solution. For transferring liquids, most operators maintain a pressure differential of 10 to 25 pounds; this

Members of the Round Table Executive Committee include: (left to right) Al Spillman, Fertilizer Manufacturing Co-operative; Vincent Sauchelli, NPFI; and H. L. Marshall, Olin Mathieson Chemical Corp.



differential may be up to 40 lbs. in going to process.

"Special precautions must be observed if a pump is being used in conjunction with air pressure," observed Mr. Whitlock. "Centrifugal pumps should be operated

with the lowest practical pressure on the pump's discharge side,—as volume drops off rapidly as pressure increases at this point. Also, pumps should be located as close to the tank car as possible, to keep the suction line short."

### Coping With Solutions That Have 'Salted Out'

**N**ITROGEN solutions with a high "fixed to free" ratio are an economical source of nitrogen for making high nitrogen grades, admitted Mr. Whitlock . . . but they require special precautions in handling in cold weather. Even the best operators have found it false economy to try to use high salt-out solutions in extremely cold weather, he pointed out.

If after hook up is made and air supplied, no flow is indicated, the source of suspected salt out should be determined. The first step is to determine if the salt out is in the unloading lines, or involving the car itself. A hose line can be run over the side of the car, and liquid valve opened to determine if there is adequate flow of solution. If there is flow, then pipe lines should be checked next. Back-washing with hot water or steam may clear the lines; — sometimes blowing lines with air is sufficient to clear the obstruction. If the line is badly salted, it may be necessary to clear by probing with a hot water or steam probe until the obstruction is gone.

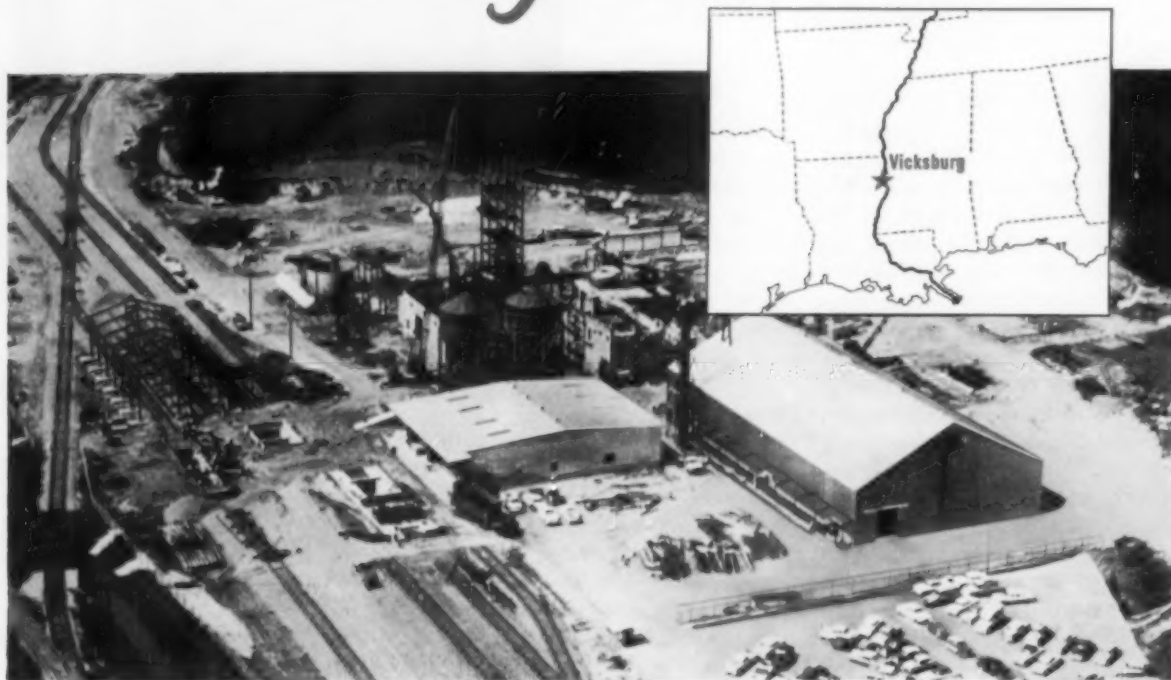
If the salt out obviously involves the car, it may be possible to "back wash" the standpipe by pumping in some water through

the pipe lines to the liquid outlets —the warmer the water the better. In most cases, it may be only the liquid outlet valve, or only the stand pipe which is clogged, while the bulk of material in the car is still in solution. In such a case, remove the outlet valve, and wash thoroughly with hot water.

It is most important, cautioned Mr. Whitlock, that all safety precautions be observed when making adjustments on a tank car or storage tank, remembering that the pressure a solution exerts is quite different over a wide range of temperatures. If in any doubt whatsoever as to advisable procedure, it would be well to check with the supplier, urged the speaker.

Salting out in storage tanks, nurse tanks or trucks poses additional problems, observed Mr. Whitlock in response to questions from the audience. If it is possible to get any flow at all, the best way to bring material back into solution is with agitation. This can often be accomplished by continually recirculating material by pump. If salt out condition is extreme, perhaps the only way is with added hot water or steam in addition to recirculating. If dilution becomes necessary, use should be

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made of dilution charts supplied by the nitrogen producers, showing changes in physical properties.

Another suggested way to bring material back into solution or to lower salt out temperature is to introduce added ammonia into the system. This will not only create some heat, but will change the salt out temperature as well. This system, of course, introduces an increased handling hazard, but can be used if precautions are observed.

#### When is the Tank Car Empty?

IT is hardly practical or advisable to determine whether a nitrogen solution tank car is empty by looking inside. Yet, some means of determining emptiness is appar-

ently needed. In '59-60 2.5% of the solution tank cars shipped by Sinclair Petrochemicals, were returned to the plant containing solution, reported Ben T. Anderson of Sinclair. In all cases, he said, this solution could have been removed by the customer.

The most common reason for not emptying a solution tank car, remarked Mr. Anderson, is insufficient air pressure on the tank car. It is very important that an operator know the temperature and the corresponding vapor pressure of the solution being unloaded. If this solution is to be transported from tank car to process, sufficient additional working pressure must

(Continued on Page 72)

### Multiwall Shipping Sack is Versatile Container

IN a discussion on multiwall bags for the fertilizer industry, F. Pocta, Paper Shipping Sack Manufacturers Association, moderated a symposium in which participants included, W. L. Shoemaker, International Paper Co.; R. A. MacDonald, Bemis Bag Co.; and J. H. Dively, St. Regis Bag Co.

"The physical characteristics of multiwall paper shipping sack construction offer the packaging engineer a versatile container with unlimited possibilities for applying exactly the right amount of strength, and with the added use of specially treated walls, the exact type of protection needed to assure the preservation and safe delivery of a wide variety of products," observed Mr. Pocta. In addition, the clean surfaces of paper shipping sacks, printed in brilliant colors, provide a dynamic advertising medium for brand identification and other attention-arresting copy the shipper may wish to emphasize concerning his product.

In 1960, the paper sack industry produced over two billion seven hundred million multiwall sacks for the packaging and shipment of approximately four hundred different products, varying greatly in density and physical characteristics.

Members of the Paper Shipping Sack manufacturers' Association produced approximately 90% of this volume, of which

32.45% was for the packing and shipment of Agricultural and Food Products  
18.28% for Building Materials  
38.88% for Chemicals and Drugs  
7.97% for Minerals  
2.42% for Miscellaneous Products

100.00%

A breakdown of 1960 statistical data by types and capacities of Multiwall Sacks for the packaging and shipment of Mixed Fertilizers is as follows:

18.81% were Sewn Valve Type  
63.89% were Sewn Bottom Open Mouth Type  
17.00% were Pasted Valve Type  
0.30% were Pasted Bottom Open Mouth Type

100.00%

Multiwall Paper Shipping Sacks produced in 1960 were made for the following package capacities of mixed fertilizers:

38.48% for the packaging of 50 lbs. per sack  
40.83% for the packaging of 80 lbs. per sack  
20.69% for the packaging of 100 lbs. per sack

100.00%

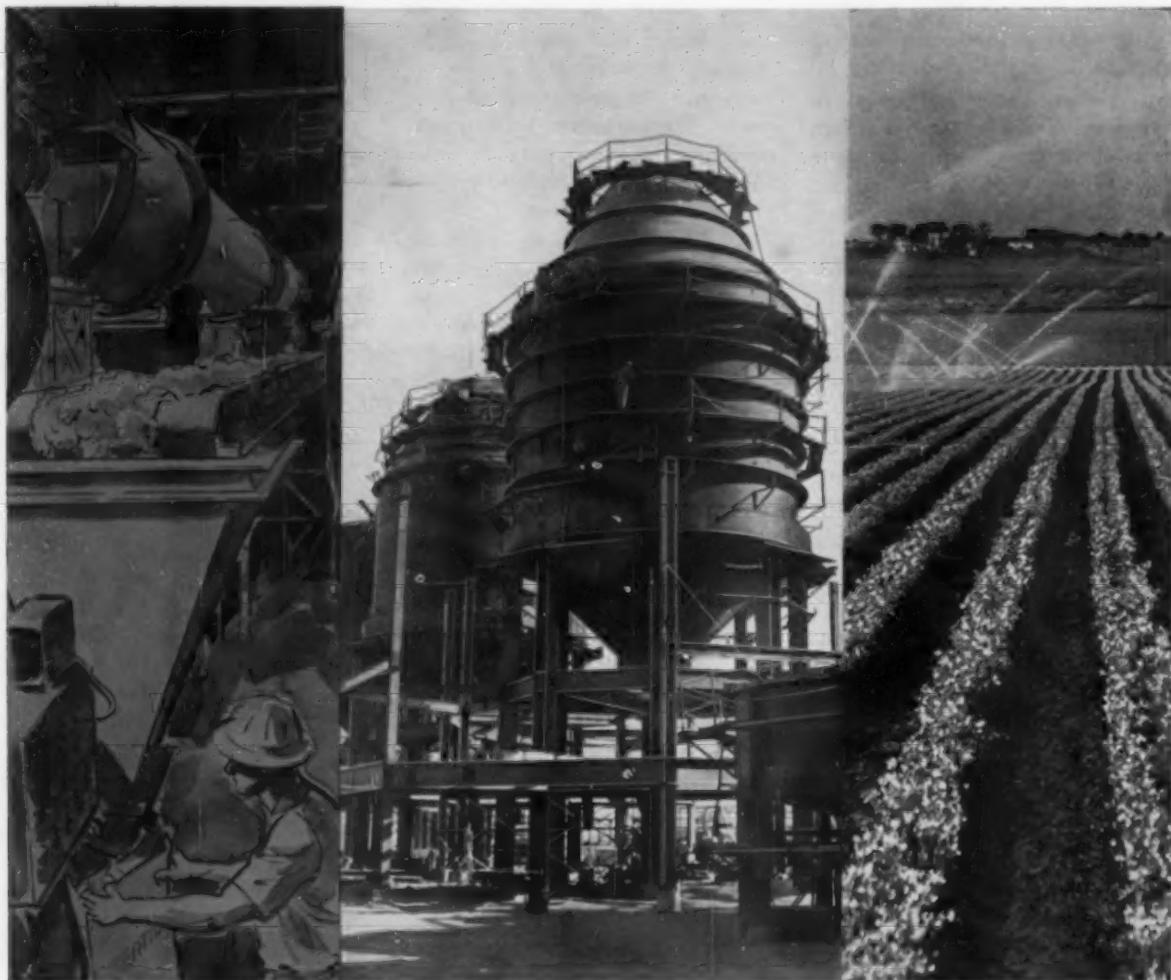
The Paper Shipping Sack Manufacturer's Association made a study last year to determine the number of different sack widths that the fertilizer industry used for the packaging and shipment of mixed fertilizers. This study revealed that 96.66% of the total volume of sacks demanded by the fertilizer industry for the packaging of mixed fertilizer was from 12 shipping sack paper widths, while only 3.34% of the total volume of sacks demanded was made from as many as 18 odd widths of shipping sack paper.

"The packer may have a very practical need," said Mr. Pocta, "to specify sacks that are within this category of odd widths. But then again, he may not have a practical need to specify sacks made of these odd widths. We believe he should consult his sack supplier and re-

(Continued on Page 72)

Members of the multiwall bag symposium included: (left to right) F. Pocta, Paper Shipping Sack Mfrs. Assn.; R. A. MacDonald, Bemis Bro. Bag Co.; and J. H. Dively, St. Regis Paper Co.





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## Agriculture's Future Linked To Research And Education

**With the physical and financial picture of agriculture as it exists today, and as it promises to hold for the next decade, the role to be played by agricultural colleges cannot be diminished. As more progress is made toward upgrading the efficiency of agriculture, a greater educational effort will be required for each step of the way.**

ONLY if farmers begin to fertilize their pastures and other forage lands as they now fertilize crops, will they begin to realize a better rate of increase in efficiency of livestock production, Dr. W. H. Garman, chief agriculturist, National Plant Food Institute, Washington, D. C., told the 15th annual convention of the Association of American Fertilizer Control Officials, October 26, at the Woodner Hotel in Washington. He said that total farm output per man-hour in 1960 was about four-fold greater than in 1930, while livestock production per man-hour only doubled.

Improved feed utilization, better livestock, and livestock sanitation practices have accounted for most of the increased efficiency in the production of livestock since 1940, he said. Improvements will occur in the future, Dr. Garman predicted, as a result of these practices, but a greater improvement will occur as a result of more intensive management and use of grasslands.

Dr. Garman reviewed the picture of U. S. agriculture in terms of physical assets and in terms of dollar income. He said that, in 1940, the physical assets of the

farms in the mainland states amounted to \$48.8 billion, whereas, in 1960, these assets had grown to \$186.9 billion. This sounds like a tremendous change, he said, but when one views this in terms of 1940 dollars, the increase is only from \$48.8 to \$59.7 billion.

Gross farm income has gone up from \$11,319 million in 1940 to \$38,327 million in 1960, or more than three-fold, he said, whereas the realized net income to farm operators increased only from \$4,289 million to \$11,700 million, or less than three-fold. That increased production costs accounted for most of this reduction in net income, he continued, is evidenced by the fact that costs, other than wages, rent, and interest on mortgages, jumped from \$4,979 million in 1940 to \$21,768 million in 1960, or more than four-fold.

With the physical and financial picture of agriculture as it exists today, and as it promises to hold for the next decade, Dr. Garman declared, the role to be played by our agricultural institutions cannot be diminished. "I think that it goes without saying," he said, "that as more and more progress is made toward upgrading the efficiency of agriculture, a greater educa-

tional effort will be required for each step of the way."

Only if research and education go forward as already envisioned, he predicted, will the new science of technology reach our farms at an ever accelerating rate. This is going to be necessary if the few people remaining on our farms are to keep production at a sufficiently profitable level to enjoy a standard of livelihood comparable with the other segments of our society, Dr. Garman concluded.

Dr. Robert C. Edwards, president of Clemson College, Clemson, South Carolina, told the control officials that agriculture today not only is a big business, but it is a terribly complicated one. More and better education, he said, not only for youth but for adults, is necessary.

The American miracle in agriculture begins with science, Dr. Edwards said. He pointed out that 70 per cent of the crop varieties in the United States today were unknown a generation ago. Man's basic need for food and shelter must be met, Dr. Edwards said. He added that land grant institutions have a tremendous responsibility to the state and the nation.

Referring to the work of fertilizer control officials, Dr. Edwards pointed out that more than 30 states now have adopted a model fertilizer bill resulting in uniform labelling. He praised the control officials for their part in bringing this about. The outstanding contribution made by the American Association of Fertilizer Control Officials, Dr. Edwards said, has been in achieving cooperation among

all segments of the fertilizer industry. The collection and distribution of fertilizer use data also has been very useful, he said.

In an address on the Diagnosis and Recommendation of Secondary and Minor Elements, Dr. Robert E. Lucas, extension specialist in soil science, Michigan State University, East Lansing, listed five steps that should be considered when determining a plant nutrient problem. They are: 1. Recognizing the deficiency symptom; 2. Observing soil types or locations; 3. Checking the crop response list; 4. Having a complete soil test made; and 5. Having an analysis made on the foliage.

Gordon Cunningham, Tennessee Corp., Atlanta, Ga., spoke on the sale and distribution of micronutrients. He said that if we wait until micronutrient deficiency symptoms show up in all parts of the country, serious difficulties could develop in the not-too-distant future. Trace elements, he pointed out, are no panacea or cure-all for

any situation. They are, however, part of the overall chain and their importance should not be overlooked, he concluded.

The time is past when N-P-K alone can be expected to do the job as complete fertilizers under modern conditions, Dr. Samuel F. Thornton, F. S. Royster Guano Co., Norfolk, Va., told the control officials. Nitrogen, phosphorus, and potash, he said, must be supplemented with trace elements. There now are more plant nutrient deficiencies, or at least more are recognized, he said, than in the past — mainly because of improved detection techniques.

The real problem, Dr. Thornton pointed out, is in less-severe deficiencies that cannot be recognized but still result in great losses.

The 1962 meeting of the American Association of Fertilizer Control Officials will be held October 12 in Cincinnati, Ohio. It will be held in conjunction with the 1962 meeting of the American Association of Feed Control Officials.

either materials of known composition, or an existing procedure with demonstrated accuracy. A procedure, he continued, must be tried out under the conditions under which it is to be used.

Dr. Charles W. Gehrke, University of Missouri, presented an analysis of synthetic Magruder check fertilizer samples. He said that the committee on check samples is interested in knowing which laboratories are having difficulties and why.

It is very common to observe standard deviation of results between laboratories, he said, to be five to ten times greater than deviations of results within a laboratory. It is the responsibility of the chemist to follow detailed instructions and come close to the consensus, Dr. Gehrke pointed out.

He compared the various analytical methods now in use and showed how their results vary. Laboratories that are getting good results, he said, should continue to operate as they do now. Many laboratories, however, are consistently either high or low in their findings, he said. These laboratories must examine their procedure and eliminate the cause of their errors.

In addition, many laboratories are erratic. They must find the cause of their inconsistency and correct it, Dr. Gehrke said. Often, it is a very simple solution, he added. Seven per cent of the laboratories included in the Magruder check fertilizer sample system produce false or erratic results, he concluded.

One of the best ways for control officials to maintain better relations with industry is to have effective and current communications with the industry, Henry DeSalvo, head of the Feed, Fertilizer & Pesticide Division, Little Rock, Arkansas, told the conference. Exercising common sense and judgment also is a must in maintaining better relations, he said. He explained that this meant interpreting the spirit rather than the letter of the law in some instances.

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## Chemical Control Conference

**In order to establish the accuracy of any analytical procedure, one requires either materials of known composition, or an existing procedure with demonstrated accuracy. And, a procedure must be tried out under the conditions under which it is to be used.**

THE fourth annual NPFI Conference on Chemical Control Problems was held October 25, also at the Woodner Hotel in Washington, and was held in conjunction with the Control Officials meeting. W. M. Hoffman, U. S. Department of Agriculture, Beltsville, Md., described the Phosphorus Workshop held last July at Purdue University. He said that the workshop idea has proven to be a popular and successful way of introducing new methods. It is more effective, he said, to bring the

analyst to the new method, than to bring the method to the analyst.

In a workshop, he pointed out, there always is time for full expression of ideas, and questions always are answered, either by those conducting the workshop or by other analysts attending. The Phosphorus Workshop was sponsored by the National Plant Food Institute, The American Association of Fertilizer Control Officials, and the Association of Official Agricultural Chemists. It was arranged primarily to enable chemical control chemists to become familiar with the procedure and technique for determining phosphorus in fertilizer by a new Quinolinium Method of analysis. (See *Agricultural Chemicals*, Aug. 1961, page 46).

Dr. W. J. Youden, U.S. Bureau of Standards, said that in order to establish the accuracy of any analytical procedure, one requires

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## Face Fly Poses Threat To Both Livestock And Wildlife

**The face fly is becoming a major pest of horses and may be doing a great deal of damage to deer, moose, and other large wild animals. Cattlemen are "resorting to many desperate approaches to solving the problem."**

by Donald A. Davis

**N**OT since the hornfly in the 1890's has the dairy and cattle man had such a problem as he is presently encountering with the face fly. H. J. Teskey, of the Livestock Insect Laboratory of the Canadian Dept. of Agriculture, told a symposium on the face fly in Toronto on Dec. 31. Mr. Teskey was one of four panel speakers at the fourth annual meeting of the Canadian Manufacturers of Chemical Specialties Association at the Royal York Hotel, Toronto, Oct. 30-Nov. 1.

The panel, which was moderated by W. P. Watson, Livestock Commissioner of the Province of Ontario, included Dr. W. E. Heming, Ontario Agricultural College; Dr. A. A. Kingscote, Ontario Veterinary College; and J. A. Dalrymple, Kemptville Agricultural School.

Continuing his remarks, Mr. Teskey reported that the face fly is also becoming a major pest of horses, and may be doing a great deal of damage to deer, moose, and other large wild animals. He said it feeds primarily on the tears, mucous, and perspiration of the cattle, and its apparent interrelationship with the horsefly (attacking horsefly bites) is a particular

source of trouble. Reporting on field studies conducted by the Canadian Dept. of Agriculture, he gave detailed data on breeding,

reported, that the cattlemen are "resorting to many desperate approaches to solving the problem." He said many methods of control

Members of the face fly symposium were: (L to R) J. A. Dalrymple, Kemptville Agricultural School; A. A. Kingscote, Ontario Veterinary College; W. E. Heming, Ontario Agricultural College; H. J. Teskey, Livestock Insect Control Laboratory, Canadian Dept. of Agriculture; and W. P. Watson, Livestock



Commissioner of the Province of Ontario.

heaviest infestation, and other pertinent information on habits.

Dr. Heming restricted his talk to a discussion of the spread of the face fly, and advanced the theory that the pest entered North America in the luggage of returning airmen or their families coming in to the R.C.A.F. base at Greenwood, Nova Scotia. He based the theory on known habits of the fly, coupled with the heavy travel to Greenwood and the fact that many R.C.A.F. personnel live in nearby Middleton, where the first flies were discovered in 1953. As of October 1961, he said, 31 states of the United States reported the face fly in evidence, together with all the Canadian provinces west to Ontario. He hinted that because of the heavy air travel throughout the U.S., the fly would very shortly be in nearly every state.

The face fly causes so much annoyance to cattle, Dr. Kingscote

have already been tried in Canada, and said that aerial spraying (for large dairy farms), poison attractant bait stations, and irradiation of the males have all given some indications of success. Most commercial repellents, he said, haven't proven economical, long lasting, or non-irritating (mucous membranes) enough to offer a practical solution. Although most of the work at the Ontario Veterinary College has, of necessity, been a study of the fly's habits and its effect on cattle of various breeds and varying ages, he reported that the most promising methods of control tested employed a 1% Dilox cereal bait, a DDVP sugar bait, and *Bacillus Thuringiensis*.

Mr. Dalrymple concurred in the report on the effectiveness of DDVP sugar bait, but also reported good results with a methoxy-chlor paste (on resting places),

(Continued on Page 76)



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## Insect Control Recommendations Emphasize Avoidance Of Hazards

**Home garden insect control recommendations include the most effective old and new insecticides. Many pesticides, however, are too toxic for homeowners to use. Needless hazards are to be avoided and only those materials which are known to have a low mammalian toxicity should be recommended to homeowners.**

PERFORMANCE of various new and "old" agricultural chemicals in New York State this past season was the major topic of discussion at the 23rd annual New York State Insecticide and Fungicide Conference, held November 7-9 at Cornell University, Ithaca, N. Y. The annual conferences are designed to provide for an informal exchange of information between research and extension personnel of the Ithaca and Geneva Stations of the New York State Agricultural Experiment Station and members of the pesticide and pesticide application equipment industries doing business in New York State.

On the basis of research investigations at the various New York State Experiment Stations, tentative recommendations were made for 1962, for the control of insects and diseases of: fruits; vegetables and potatoes; florist crops; ornamentals; livestock; and forage crops. Because the recommendations are tentative,—and the researchers stress this point, emphasizing that the recommendations are "tentative and subject to change as more information becomes available,"—the data and recommendations are not released for publication. However, mime-

ographed material including the various recommendations is available from Cornell University in a 300-page folder at \$2.50 a copy plus mailing charges.

### Vegetable Insects, Diseases

Recommendations for vegetable insect and disease control are prepared to guide the county agricultural agents in making recommendations to New York State growers during the 1962 season. Discussed in the folder are only the most important vegetable diseases of New York that may be partially or completely controlled by chemicals applied as seed treatments or as foliage sprays or dusts. The degree of success obtained with the foliage fungicides is dependent upon proper timing and adequate coverage. Most disease control programs suggested are based on preventative schedules rather than on curative applications. For crops that face serious disease threats yearly, routine basic schedules are outlined and emphasized—for others, specific chemicals are recommended for only the most important diseases.

A section on home garden recommendations includes the most effective old and new insecticides which have Federal approval for

use on vegetables. Authors of this section point out that many pesticidal chemicals are too toxic for homeowners to use. While there is no substitute for careful handling of any insecticide, they point out, needless hazards are to be avoided and only those materials which are known to have a low mammalian toxicity should be recommended to homeowners.

### Fruit Insects, Diseases

Recommendations are summarized from information contained in extension publications as well as unpublished data made available by the research personnel of the New York State Agricultural Experiment Station. A complete chart of insecticides and acaricides for use on fruit crops is presented, including the residue tolerance allowed and the interval before harvest for each crop.

### Control of Forage Insects

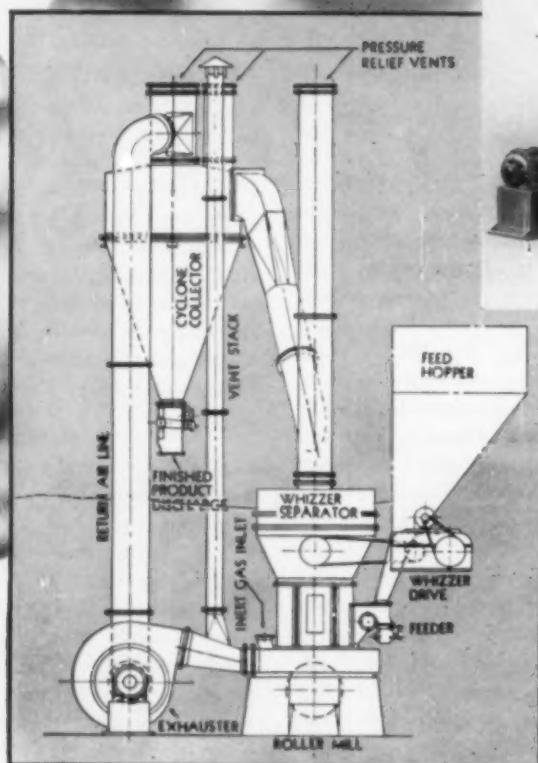
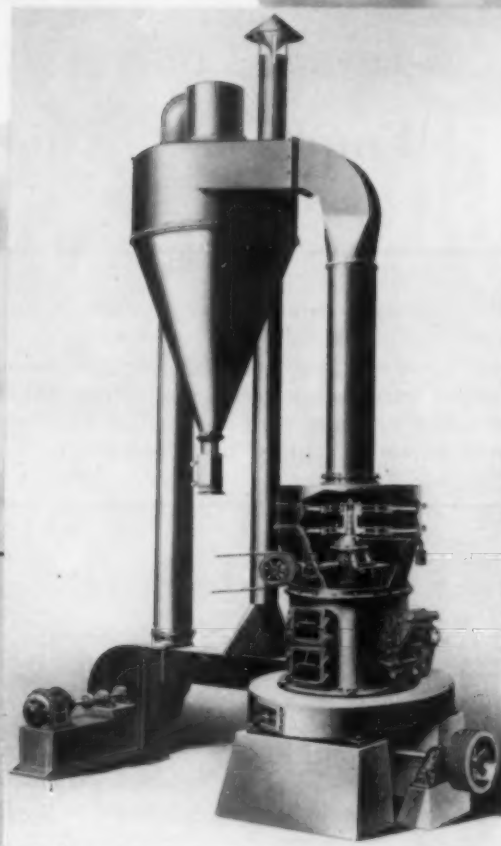
In discussing the control of insects on forage crops, researchers point out that this is not just a matter of "killing the bugs." It is a complex problem, they point out, with many important, practical considerations. One must consider the biology of the pest so that it can be destroyed when it is most vulnerable; prior to egg laying when possible, and particularly before the damage is done. One must consider costs of insecticides and application, as hay is usually not a high value crop. Other factors which must be kept in mind are application equipment, as well as available kinds and formulations of toxicants, the effects of poison-

*(Continued on Page 76)*

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## Two Products Introduced At Tour Of New Olin Lab.

**Apholate has caused sterility to houseflies when they eat it in a bait or walk over a treated surface. It also sterilizes larvae grown in treated water. Another new Olin Mathieson agricultural chemical is Omaflora, for the control of flowering of pineapple.**

*Olin's new agricultural chemicals research laboratory at the Squibb Institute for Medical Research, New Brunswick, N. J.*



**A** NEW pesticide for the control of houseflies was announced by Olin Mathieson Chemical Corporation on the occasion of a press tour late in October of their new research laboratory in New Brunswick, N. J. The pesticide is Apholate, an insect sterilant patented by Olin Mathieson, but developed by USDA scientists some four years ago. Olin Mathieson entomologists are now cooperating with the USDA on a program of further re-

search to achieve maximum effectiveness and safety. Target date for commercial introduction of the new chemical as a bait has tentatively been set for 1964. Its market has been estimated at in excess of \$10,000,000 a year.

The chemical name of this pesticide is hexaris (1-aziridinyl) phosphonitrile. Researchers indicated that in the laboratory, Apholate has caused sterility to houseflies when they eat it in a bait or

walk over a treated surface. It also sterilizes larvae grown in treated water. In two USDA field tests on the Florida Keys, Apholate caused 80 to 98 per cent sterility in houseflies.

Olin Mathieson investigators are also studying processes for commercial production of the chemical—and synthesizing other derivatives in the search for maximum activity and safety. In addition, the company has started a testing program to see if Apholate or similar chemicals are effective against other insect pests. Approximately a dozen studies are going on in different parts of the world.

Another new Olin Mathieson agricultural chemical is Omaflora (beta-hydroxyethylhydrazine), for the control of flowering of pineapple. Spraying this growth regulator on pineapple plants produces uniform flowering rather than maturation over an extended period. Olin is now cooperating closely with the Pineapple Research Institute to complete the final phases of research required to obtain clearance from the United States Department of Agriculture for use of Omaflora in pineapple growing.

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Plant pathologists examine seedlings growing under completely artificial conditions at Olin's new laboratory. Consistent test results are made possible

by specially-designed growing rooms that control such weather variables as light intensity and duration, temperature, and relative humidity.



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## Fertilizer Views and News



by Vincent Sauchelli

Dr. Sauchelli is a Consultant to the Agricultural Chemicals Industry.

### U. S. Food Needs To Increase By 20%

**W**ITH no great depression, I would anticipate that by 1970 the average city person will have 15 to 20 per cent more to spend than today. There should be about 30 million more Americans in town and city and a total demand for about 20 per cent more meat, fruits, vegetables and dairy products than are consumed today."

The above forecast was recently made by Henry Wallace, formerly Secretary of Agriculture and, unquestionably, a leading student of American agriculture. Other predictions give practically the same picture of sharp increases in population and in the demand for food and other products of our farms. The U.S. Department of Agriculture forecasts that, by 1975, our farms will have to produce on average about 25 per cent more in total output than today and the increases will be chiefly by way of higher crop yields per acre and increased efficiency. It has been estimated that if we assume that the per-acre yields of 1951-53, taken as a base, still held good in 1975, it would be necessary to utilize the equivalent of more than 150 million additional acres of cropland to satisfy the country's needs. But such a tremendous new acreage of productive land is not available. Perhaps 25 million acres could be added to our cropland base by transferring grassland pasture to cropland rotation and by reclamation of non-productive land by irrigation, drainage and flood control. Hence, the additional output will have to come through more intensive use of fertilizers, pesticides,

improved soil management practices and higher managerial skills. Farms will be bigger and more highly specialized; they will adopt more labor-saving techniques, buy additional equipment for a more complete mechanization of crop production and for systems of feeding livestock; and hire more services, such as spraying, dusting, fertilizing, and professional management assistance.

Dr. W. M. Fifield, one of the Provosts at the University of Florida, has forecast that yields per acre of many field crops may be two to four times present yields; that better farmers everywhere will be making 200-300 bushels of corn, 6,000 to 8,000 pounds of peanuts, 60-80 bushels of soybeans and 15 to 20 tons of hay per acre. Such yields are considerably above today's average yields.

Such optimistic predictions should encourage the agricultural chemical industry as to future markets for its products. It is hard to conceive what it would be like in our country if suddenly our agriculture were to be deprived of fertilizers, pesticides, and the chemicals used in preserving food. Without such chemicals, the task of adequately feeding all our people would be impossible. One has to travel in foreign countries and study their agriculture and food markets to really appreciate the abundance of high-quality fruit, vegetables, milk and meat products available in our markets. Nowhere is it possible for the average housewife to find in the local market so much fresh farm produce unblemished by worms, diseases, and

blights as in our markets, and at such relatively lower prices. And yet, we have in our country today crusaders who campaign vigorously against the use of chemicals in the growth, protection and preservation of the nation's food supply: Chemicals, they say, are not natural (whatever that means) and their use in agriculture poisons the land and, indirectly, the food grown on it. Such misguided people may be motivated by noble emotions for the well-being of their fellow men; but they would destroy the very bulwark that stands between us and starvation.

We must be charitable and forgive them "for they know not what they do." But, it is also necessary for the agricultural chemical industry to take the offensive and acquaint our people everywhere with the truth about chemicals in food production and its preservation. A laissez-faire policy, on the theory that truth will ultimately prevail, is no longer tenable. The industry must flex its propaganda muscle.

The literature on agricultural chemicals provided by the federal and state governments, and other scientific bodies, is copious and factual. The opponents of chemicals in agriculture use the printing press, radio, and television to broadcast countrywide their propaganda, much of which is half-truths, pseudo-scientific reports and outright lies. Hundreds of reports from unassailable scientific research sources all over the world are available in our libraries which disprove the contentions of the "organics only" group that fertilizers

*(Continued on Page 82)*



## Texaco can help you stop loss of fertilizer raw materials

Many people in management believe that nitrogen loss in ammoniation, over-analysis, bag breakage, loading and unloading, amounts to only 4 or 5%.

Actually, only the best-run plants have such low losses. More typically, they may approach 15%.

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THE



DEALER

## Dealer Services Pay Off In Increased Sales And Profits

**The dealer's role in showing farmers how to combine all good production practices is becoming increasingly important. Farmers are using new and improved fertilizers and more and more fertilizer per acre is being applied. They are going to rely more and more on the fertilizer dealer to assist them with fertilizer know-how.**

PEOPLE today are demanding more and more services. This is especially true of the farmer. Today's farmer must keep abreast of developments in weed control, irrigation, insect control, soil management and other specialties. The farmer—and the fertilizer dealers—are facing a scientific revolution in agriculture. The change is more than a shift from mule and man muscle to mechanical and to electrical power. It's a chemical and biological revolution as well.

Because of these rapid changes, today's farmer often is bewildered and confused. He is bombarded constantly with leaflets, circulars, radio and television programs, and news articles from all sides on

many complex agricultural subjects. Unfortunately, few of these messages are prepared in down-to-earth language. Several studies made by agricultural colleges and by the fertilizer industry indicate that the dealer can help overcome this dilemma of the farmer. Farmers are going to rely more and more on the fertilizer dealer to assist them with fertilizer know-how.

The dealer's role in showing farmers how to combine all good production practices is becoming increasingly important. Successful farmers no longer "spoon-feed" their crops. The early American and his fish-fertilizer have disappeared. Too, the farmer with his wheelbarrow of manure and his hand fertilizer spreader has largely vanished.

Today, farmers are using new and improved fertilizers. More and more fertilizer per acre is being

applied. The fertilizer dealer has been, and will continue to be, a part of the story of employing modern fertilizer know-how on American farms.

Considerable attention is being focused on dealers by agricultural colleges and the fertilizer industry. The reason: They are the last person a farmer talks to before he buys fertilizer. Survey after survey—made by agricultural colleges and the fertilizer industry—show dealers to be key men in putting fertilizer research results to work on American farms.

Results obtained from three farmer surveys—one covering the entire nation—another from California—and a third from Georgia—are very revealing. The farmers say dealers are important. In fact, they said, "We contact our dealer more frequently about fertilizer practices than any other group or individual—more frequently than our county agricultural agent or our relatives and neighbors." Only in the Georgia survey did a group rate higher than dealers—relatives and neighbors.

Even more convincing, however, is this fact. The surveys show farmers discuss many fertilizer problems with dealers. They seek answers to: kinds and amount of fertilizer, proper placement, time of application, probable yield re-

From a presentation prepared by Division of Agricultural Relations, Tennessee Valley Authority, Knoxville, Tennessee. Presented by Dr. Ralph Wehnt, T.V.A., at Southeast Fertilizer Conference, Atlanta, Oct. 5, 1961.



**Many dealers have increased their profits and, at the same time, have enlightened their customers about the benefits of sound fertilization with such services as fertilizer demonstrations, soil sampling, and up-to-date information.**

sults, fertilizer costs, and other subjects related to efficient fertilizer use.

To answer these important questions, dealers, of course, need up-to-date information. They need sufficient knowledge of fertilizers and fertility practices in order to guide customers so that they—and the dealers—profit by more efficient fertilizer use. To help answer questions, colleges of agriculture and fertilizer suppliers are prepared to assist the dealers. They recognize the importance of the dealer and they realize that their educational and sales efforts can be multiplied by working closely with dealers. By such cooperative efforts, all will profit—dealers—the colleges—the fertilizer industry—and, of course, the main target—the farmer.

Dealers have a big responsibility—a responsibility to demonstrate that efficient fertilizer use pays. A recent nation-wide survey made by the National Plant Food Institute shows that gross income per acre becomes greater as fertilizer use increases. "High-users" made \$66 per acre—"average-users" made \$46 per acre—and "non-users" made only \$37 per acre. In other words, "high-users" made \$29 more gross income per acre than the "non-users."

Also, a recent survey of Georgia farmers shows that high fertilizer users make more money. Gross farm sales increase with higher rates of fertilization. "High-users" of fertilizer had more than double the gross sales of "low-users." No doubt their net income was substantially higher, too. These two studies outline real opportunities for increased sales and profits—both to the dealer and to his farm customers.

However, to advise farmer customers—to help them obtain greater profits—the dealer needs to understand soils and fertilizers. In addition, he must be willing to capitalize on this knowledge. Sound advice on fertilizers is simply a good customer service; it's an opportunity the dealer can't afford to miss. Farmers seem to be willing to pay for up-to-date information. For example, TVA sponsored a state-wide study of 118 dealers in Iowa. Dealers with high-knowledge scores on fertilizer made an average gross profit of \$7,900 on fertilizer, as compared with only \$2,100 for dealers with low-knowledge scores. Also, high-knowledge dealers were able to obtain more mark-up on their fertilizer sales—10.7 percent as compared with only 6.9 percent for dealers who considered themselves to be only a "friend of the farmer."

Fertilizer knowledge, properly used, can be a major asset. From the farmer's standpoint, it is one of the greatest liabilities. Some farmers understand fertilizer—but most don't! Inadequate farmer knowledge, in fact, greatly limits fertilizer use. A strong relationship exists between farmers' knowledge of fertilizer and its use—high farmer knowledge and high fertilizer use go hand-in-hand.

The fertilizer business—like other competitive enterprises—is not "a bed of roses." Added to the major problem of inadequate farmer knowledge—there are other headaches—low profits, labor, credit, competition, and lack of time.

However, if these matters are looked at closely, they really "boil down" into two major problems—low mark-up and lack of farmer

understanding. Both of these problems, fortunately, can be overcome. Many dealers have increased their profits and, at the same time, have enlightened their customers about the benefits of sound fertilization. They provided their customers with services of an educational nature, such as: assisting them in collecting soil samples, setting up fertilizer demonstrations, and providing up-to-date information.

Through the use of services, dealers can increase their profits. The more common services are soil sampling, demonstrations, farmer meetings, general education, mass promotion, spreading, credit, and price discounting. However, it is not the number of services that counts. What really counts is: *The kind and quality of services.*

In an Iowa study, farmers were asked to complete this sentence, "I wish my fertilizer dealer would. . . ." Of the farmers who completed the sentence, 38 percent said, "reduce prices." However, 54 percent suggested such things as: provide more services, give more information, sponsor fertilizer demonstrations, and assist with soil sampling. To many farmers, therefore, price is less important than good services.

A big gap exists, however, between services farmers want and those dealers offer. The area of greatest discrepancy is in services of an educational nature. A large difference exists between soil sampling, demonstrations, and farmer meetings. It is the educational services that are associated with higher fertilizer sales, mark-ups, and total profits.

It is, of course, not easy to organize a good service program for farmers. However, all the evidence shows that a good service program has real possibilities—for both the dealer and his customers. Perhaps the basic question is: does the dealer want to *save* his customers a few dollars a ton by reducing prices—or does he want to help his customer *make* an addi-

*(Continued on Page 80)*





Electron micrographs showing plate-like Micro-Cel E and spherical Micro-Cel B structures.

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vents are the same. The formulation at the right is made with TRITON X-152 and TRITON X-172, and the one at left with competitive emulsifiers.

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## Researchers Discuss Use Of New Pesticides

**In many instances, only one registered chemical stands between the farmer and attacks by insects or fungi. Researchers, however, constantly are hoping to add to the reserve store of useful materials to protect agricultural products.**

by Loren H. Milliman

SCIENTISTS are constantly searching for new materials to control pests because the destroyers of food and fiber have demonstrated their ability to overcome most of the weapons man has in his arsenal to use against them. This was emphasized repeatedly by various speakers at the 76th annual meeting of the Oregon State Horticultural Society at Oregon State University November 15, 16 and 17.

In many instances only one registered chemical stands between the farmers and overwhelming forces of insect or fungus attack, it was pointed out. Researchers constantly are hoping to add to the reserve store of useful materials to protect agricultural products.

Garden symphylans (formerly known as symphylids) which infest much of the arable land of western Oregon, apparently are controlled by parathion and other materials in pre-planting treatments, but

enough of the pests survive to cause damage the next season, H. E. Morrison, OSU entomologist, told those attending the vegetable section of the four-day convention.

Other speakers at the apple and pear, stone fruit, and small fruit sections meeting simultaneously, had similar reports concerning other insect or fungus pests.

Zinophos, formerly designated by American Cyanamid as E. N. 18,133, provided spectacular results last year when two to five pounds of the toxicant per acre were used in carrot and beet fields. The vegetables in the check plots were entirely destroyed by the pests. During 1961, however, there was good growth in both the check and tests plots, indicating, according to Prof. Morrison, that the pests had moved to another area.

Chemical tests indicate that the material does not carry over in the soil from one season to the next, with very little of the toxicant remaining in the soil after 14 weeks. It does not give crop protection over prolonged periods for symphylans, cabbage maggots and tuber flea beetle larvae, he said.

Significant flavor differences were detected in freshly cooked beets, but none after the beets were processed, and there appeared to be no translocation of Zinophos in corn, beans and potatoes.

V-C 13 Nematocide, a product of the Virginia-Carolina Chemical

Corporation, has proved promising in OSU vegetable tests against symphylans at 5 to 10 pounds of the toxicant per acre. However, serious modification of flavors in tomatoes and potatoes was reported by the food technology department of the university, Prof. Morrison added.

Although excellent early control of European red mites and pear psylla is obtained with a delayed dormant application of oil-lime sulfur, other chemicals are necessary to check the pests later in the season. This was the information supplied by F. E. Ellertson, Hood River, OSU entomologist at the Mid-Columbia Branch Experiment Station.

The combination spray destroys overwintering eggs of the European red mites on apple and pear trees and controls overwintering psylla and their newly-deposited eggs on pear trees.

Guthion provides outstanding control of pear psylla nymphs and adults, he continued, but researchers are continuing to hunt for new materials because pear psylla have demonstrated their ability to build up resistance to various chemicals after the materials have been used for a number of years.

Dilan, used as a pre-bloom spray, gave excellent results in controlling psylla, but when it was used as a cover spray, control was slower. This chemical did not pro-

duce phytotoxicity in the Hood River area, but some other materials under test did, he added.

Eradex, which is reported to be phytotoxic, appeared promising as a cover spray. The initial kill of pear psylla nymphs was good, and the compound seems to have a long residual life.

On small test plots, the pesticide labeled 43,043 controlled pear psylla effectively, as did American Cyanamid's Dimethoate. Union Carbide 10854 applied late in the

season on a population of "hard-shell" nymphs gave a good initial kill, according to Mr. Ellertson.

In another phase of the tests with Eradex, good initial kill was obtained and European red mites were controlled for at least a month on bearing Delicious apple trees, but the material was phytotoxic to the fruit.

Two formulations of Niagara Chemical's 9044 were included in the tests, with one formulation not phytotoxic on Red Delicious ap-

ples. Initial mite kill was good, with control lasting between three and four weeks.

A Naugatuck Chemical product, OW 9, was not outstanding in controlling European red mites, Mr. Ellertson continued, but it cannot be discarded from further trials. Two organic phosphates, R 1504 and G 30494, failed to control red mites. Zectran also failed.

Western Oregon apple orchardists may have to adopt a spray schedule calling for as frequent applications as those common in the East. Dr. Norman D. Dobie, OSU plant pathologist, indicated in his report. A stepped-up spray program gave excellent control of mildew on Jonathan apples in trials which he conducted on the University's farm at Corvallis.

Starting at pre-pink and spraying every seven days, he obtained 85% to 90% control of infection on terminal branches when he used Karathane at  $\frac{1}{2}$  pound actual material in 100 gallons of water. Tests were equally effective with the emulsion and wettable forms, he reported.

In the past, the standard spray program has called for  $\frac{3}{4}$  pound of material starting at pre-pink and repeating at the pink and calyx with two or three cover sprays later. This year the standard program provided only 60% to 70% mildew control, while check blocks had 50% incidence of mildew.

Fruit quality was greatly improved with the more frequent, but lighter, applications, Dr. Dobie reported. About 40% of the fruit from unsprayed trees was russeted, compared with 20% to 27% on trees which received the standard treatment, and less than 10% on those which were sprayed weekly.

Not any of 10 new experimental materials which Dr. Dobie tested in comparison with Karathane measured up to it, he added.

Comparisons were also made with 10 new fungicides to see how they measured up to Cyprex in controlling apple scab. Although two or three were judged to be worthy of further trials, none was

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**Extreme caution should be exercised in the application of herbicides around newly-established plantings. The label should be read very carefully and applications should be made according to the manufacturer's recommendations.**

equal to Cyprex when it was used at the rate of  $\frac{3}{4}$  pound per 100 gallons of water.

Cyprex cut scab incidence to less than 2% compared with 54% scab on unsprayed check plots.

Another new finding in the trials conducted by Dr. Dobie is that Cyprex dust with 4% active material is fully as effective as Cyprex spray in controlling scab. These findings throw new light on opportunities for aerial dusting to hold scab in check, he pointed out. The dusting tests were conducted both at the University farm and also in the Hood River area, with 40 to 50 pounds per acre being applied.

Thylate and Niacide, two new materials, not only provided excellent control of scab on d'Anjou and Bartlett pears, but also gave the fruit excellent finish in trials at Medford. The application rate was  $1\frac{1}{2}$  pounds per 100 gallons of water.

Neither of these materials, at the time of the report, was registered for control of scab on pears, but on the basis of Dr. Dobie's findings they are being resubmitted for registration. Cyprex is the most effective of the materials for controlling pear scab, but the newer materials give better fruit finish, according to Dr. Dobie.

Studies are being conducted to determine how repeated applications of herbicides affect tree growth, what the effect of these applications is on soil organisms, and whether residues would reach a toxic level in the soil. Answers to these questions have not yet been fully determined, but some interesting sidelights were reported by Walter M. Mellenthin, superintendent of the Mid-Columbia Branch Experiment Station.

It was noted that when one chemical is applied over an extended period, the population of certain weed species tends to increase, indicating a need for rotation of the orchard chemical weed program. Young trees kept free from weed competition grew three times faster than those subjected to severe competition from weeds.

Various concentrations of Amitole, Diuron, Simazin and other weed-controlling chemicals were applied singly and in combination starting about a month after the young trees were planted. Applications of the materials were repeated in the spring or fall, depending on the treatment being studied, regardless of the presence or absence of weeds around the trees.

Growers should use extreme caution in applying herbicides around newly-established plantings, Mr. Mellenthin warned, adding: "The labels should be read very carefully, and applications should be made according to the manufacturer's recommendations."

Chemical control of strawberry runners in some cases increased yield over what was obtained when mechanical means were used to reduce the number of runners from the mother plants. This was reported by a panel at the small fruits section. Members were Robert Smith and Palmer Torvend, county agents, and Ralph Garren, OSU horticulturist.

Yields were appreciably increased when runner control was inadequately achieved in the process of weed control and general cultivation operations, the panel pointed out.

Four years' testing in small replicated plots have indicated that no yield reduction occurs in the

Northwest variety when MH-30 is applied in separate applications at the rate of 3,000 ppm, but when 6,000 ppm is put on at one time, occasionally there is some reduction in yield.

In August and September this year, at least 14 one-acre field trials were set up with MH-30 being applied at rates varying from a single 4-quart application per acre to two applications of 3 quarts at first and 2 quarts in the second application.

From 20 to 50 gallons of water per acre was used, with pressures ranging from 35 to 100 pounds. Growers noted in nearly every case that yellowing ranging from slight to heavy developed on treated plants and runners during the next two or three weeks. However, three or four weeks after spraying, even the mother plants with the greatest yellowing had pretty much returned to normal.

From the standpoint of actual runner control, the two-application method was rated good to excellent by the first of November, when the last observations were made. Growth of most runners was stopped or greatly reduced. In the single application fields, runner development and rooting began to show about the last of October.

This was about a five-week control from a single application, which was considered by most growers to be as much as desired. Certain varietal differences in tolerance of MH-30 were noted, but growers who do not have mechanical equipment that controls runners without seriously damaging or mutilating the mother plant would be justified in trying chemical control, panel members agreed. This is particularly true in the light of high labor costs in the Pacific Northwest.

Means of reducing labor costs, as indicated in the panel report, are being sought by many researchers. Dr. M. N. Westwood, OSU horticulturist, told the stone fruit section about results of trials of chemicals in thinning peaches.

*(Continued on Page 74)*

### NATA Applicator Division

John Neace, president of the Arizona Aerial Applicators Association, is to preside at the meeting of the Applicator Division of the National Aviation Trades Association during the group's annual convention, December 5 to 7, at the Statler-Hilton Hotel, Washington, D. C.

The Applicator Division meeting is being held on the morning of Dec. 5. Among subjects to be discussed are: "Swap Shop" for exchanging ideas, air agency certificates, and NATA pilot ratings — and what can be done to make them more effective.

### New Ethion Tolerances

A tolerance of 1 ppm has been established by the Food and Drug Administration for Ethion on eggplants, peppers, and pimentos. On peppers and pimientos, Ethion can be used to control both serpentine leafminer and two-spotted mite. It can be used to control two-spot-

ted mite on eggplants. Ethion is a product of Niagara Chemical Division of FMC Corp., Middleport, N. Y.

### Iowa Fertilizer Course

The annual Iowa Fertilizer Dealers Short Course and the Fertilizer Industry Representatives Conference will be held January 10 in the Memorial Union, Iowa State University, Ames, Iowa.

### Tongate Joins Simonsen

Ray Tongate has been appointed sales manager of the Simonsen Manufacturing Co., Quimby, Iowa. He formerly was associated with the Carey Salt Co., Hutchinson, Kansas, as agricultural products manager.

### Indiana Pesticide Conference

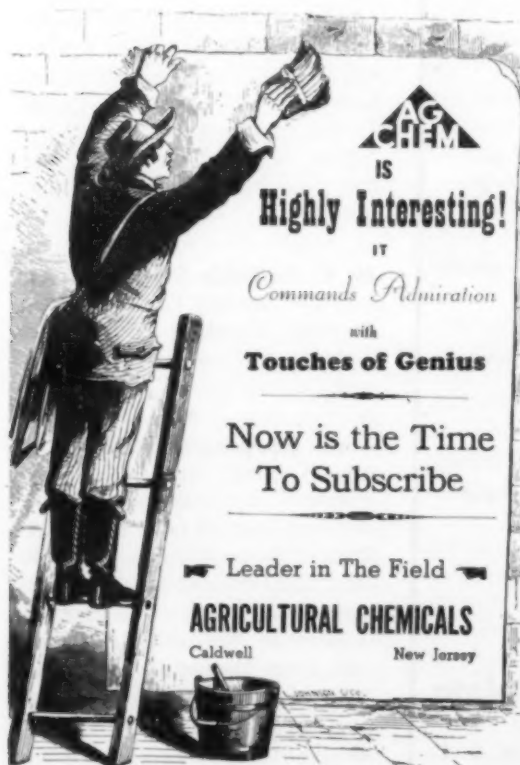
The 4th Indiana Pesticide Conference will be held at Purdue University, Lafayette, Indiana, on January 16 and 17.

### Hahn Distributors Meet

The 1962 line of seven Hahn Hi-Boy high clearance crop sprayers and tractor-mounted and trailer sprayers was introduced last month at an Evansville, Ind., meeting of 115 distributors from the United States and Mexico and Canada. Among the innovations presented was a hydraulic system for raising both outside fenders for easier maneuvering at row ends and for easier clearance of obstructions and irrigation ditches. Also introduced was a new herbicidal oil bar attachment and a flame cultivator attachment.

### Liquid Fertilizer Pumps

The Deming Division of Crane Co., Salem, Ohio, is offering a bulletin that describes in detail pumps especially adapted for field application metering, agricultural service, nurse tank and transfer service, and storage transfer service.



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## Florida Spraymen Hold Second Annual Convention

By Porter Taylor

**T**HE theme of the second annual convention of the Horticultural Spraymen's Association of Florida was "To Protect the Life, the Health, and the Well Being of the Citizens of Florida."

The rapidly growing Florida organization of professional horticultural spraymen, while chafing under Florida state regulations

governing the professional spraymen in the use of pesticides, nevertheless adopted as their first order of business a resolution supporting the restrictive regulations and urging the Florida State Board of Health to extend restrictions to include retail sales of "restricted use pesticides."

Even while the spraymen were holding their November 2-4 con-

vention at Fort Lauderdale, the State Board of Health was holding a series of hearings in thirteen of Florida's major cities to hear industry views on the control of the sale and use of "highly toxic pesticides."

Other resolutions adopted during the convention included:

1. The establishment of a fund for legislative work.
2. The study of the feasibility of setting up a national association of horticultural spraymen.

During the three day convention, experts from the Florida Agricultural Experiment Stations spoke on subjects pertaining to varieties of turf grasses, and the effect of diseases, pests, and weeds on grasses and ornamental foliage. Industry representatives also spoke on fertilizers, chemicals, and equipment needed to solve problems of the spraymen.

Larry Nipp, American Power Spraying Company, Fort Lauderdale, Fla., was elected president succeeding Charlie P. Johnson of Miami, Fla.

Vice-Presidents elected for the coming year are: Southern Region: Bill Turner, Taylor & Turner, Fort Lauderdale, Fla. Central Region: Walter Ferguson, Ferguson Lawn Service, Winter Haven, Fla. Northern Region: John Hogg, John's Spray Service, Daytona Beach, Fla.

### N. C. Pesticide School

The annual Pesticide School at North Carolina State College, Raleigh, will be held January 15 and 16.

### Farm Equipment Seminar

"Tooling Up For Systems Farming" is the theme of a Management Seminar to be held in the Palmer House, Chicago, on December 12. This one-day meeting is sponsored jointly by American Society of Agricultural Engineers and Farm Equipment Institute. It augments both the Winter Meeting of ASAE and the initial introduction of the Agricultural Engineering Exposition.



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## LISTENING POST



by Paul Miller

This department, which reviews current plant disease problems, is a regular feature of AGRICULTURAL CHEMICALS. The comments are based on observations of collaborators of the Epidemiology Investigations, Crops Protection Research Branch, USDA, Beltsville, Md.

### Fungicides For Control Of Iris Leaf Spot

EDWARD S. Elliott, Claude J. Davis, and Charles H. Howard (1), of West Virginia U., obtained good control of leaf spot, caused by the fungus *Didymellina macrospora* on bearded iris by spraying with zineb, maneb, or *N*-trichloromethyl thiophthalimide (Phaltan). The fungicides were about equally effective. According to Elliott and his associates, leaf spot is the most wide-spread disease of bearded Iris in West Virginia. Infected plants usually become stunted and unthrifty. In northern West Virginia the fungus usually overwinters in the asexual stage, known as *Heterosporium iridis*. Renewed growth of the asexual stage furnishes inoculum for early spring infection. Effective control would require sufficiently early fungicide applications to prevent primary infection, and repeated spraying during the growing season.

#### Water-Emulsifiable Asphalt

According to D. L. Gill (2), of the Crops Research Division, Agricultural Research Service, United States Department of Agriculture, reporting joint studies with the University of Georgia Agricultural Experiment Station, the usual management of camellia plants after grafting provides favorable conditions for attack by the dieback fungus, *Glomerella cingulata*. Failure of grafts due to dieback is one of the causes of heavy losses that frequently follow grafting. Gill found that addition of a fungicide to the water-emulsifiable asphalt, used to cover grafting wounds, reduced losses from dieback. Ferbam, captan, *N*-trichloro-

methyl thiophthalimide (Phaltan), and thiram were the fungicides tested.

#### Control of Bacterial Scab

In Pennsylvania, according to Lester P. Nichols (3) of the Pennsylvania State University, bacterial scab caused by *Pseudomonas marginalis* and *Fusarium corm rot* and yellows caused by *Fusarium oxysporum* f. *gladioli* are both important diseases in commercial gladiolus fields and in home gardens. In control experiments in 1959 and 1960, Nichols obtained excellent control of bacterial scab from preplanting treatment of the corms with thiram-dieldrin applied as a dust. The thiram-dieldrin treatment also resulted in an outstanding increase in production of flower spikes, as compared with other treatments.

Incidence of *Fusarium corm rot* was too low in 1959 for evaluation of treatments. In 1960, however, corms of one test variety were badly infected. The thiram-dieldrin treatment gave poor control of *Fusarium corm rot*, whereas preplanting soak treatments in 3% ethyl mercury phosphate (New Improved Ceresan) or 7.7% ethyl mercury *p*-toluene sulfonamide (Ceresan M) resulted in excellent control. In both years, treatments containing mercury (in 1959 these were calomel and New Improved Ceresan) retarded flowering by as much as two weeks as compared with other treatments, and also reduced total spike production.

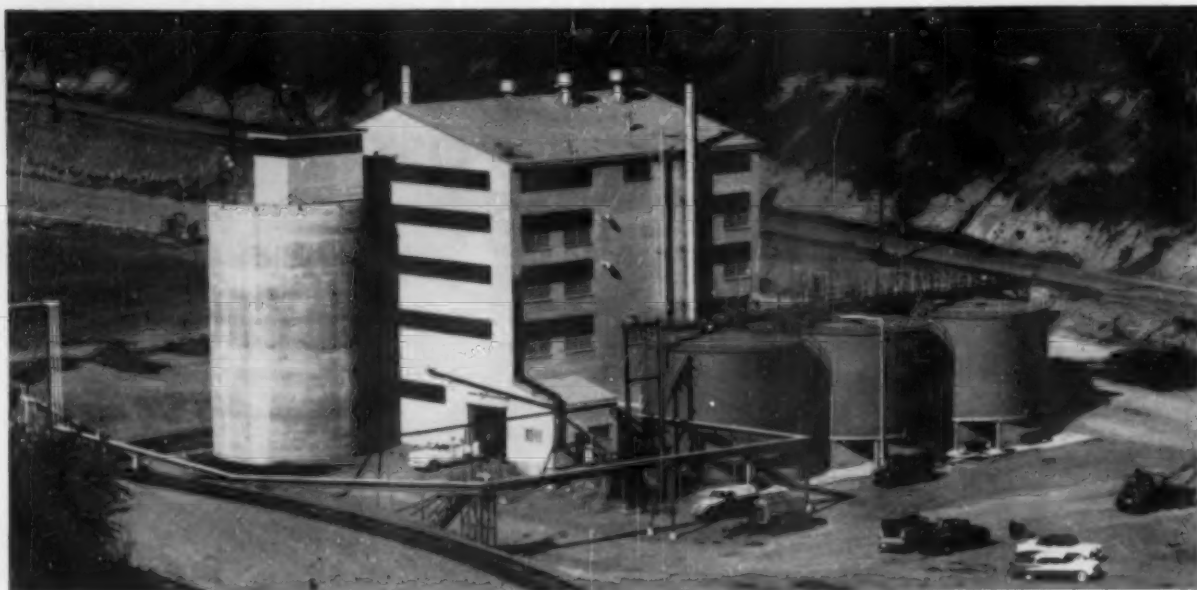
#### Nematodes in Citrus

A comparison of preplant soil treatment chemicals for control of

burrowing nematode in citrus groves: R. F. Suit, (4), of the Florida Citrus Experiment Station, Lake Alfred, Florida, since 1956 has conducted field experiments to determine the effectiveness of various chemicals for use as a single preplant soil treatment in the pull and treat program for controlling the citrus spreading decline disease caused by the burrowing nematode, *Radopholus similis*. He found that single preplant treatments at proper dosages of 1,3 dichloropropene (DCP), 1,2 dibromo-3-chloropropane (DBCP), and ethylene dibromide (EDB) controlled the burrowing nematode for as long as 4 years from the time of treatment. These three chemicals were as effective as 1,3 dichloropropene-1,2 dichloropropene (D-D), currently used in the control program. Some other nematocides tested on smaller plots also gave satisfactory control for 4 years; these were DCP plus EDB, *O*,2,4-dichlorophenyl *O*,*O*, diethyl phosphorothioate (VC-13), and 3-bromo-propane (S-1295).★★

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Aerial view shows the complete Phosphoric Acid Plant of The Bunker Hill Company at Kellogg, Idaho. Three 35' Dorr Storage-Clarifiers are seen in the foreground.

## SO<sub>2</sub> from zinc plant opens way for phosphoric acid production at

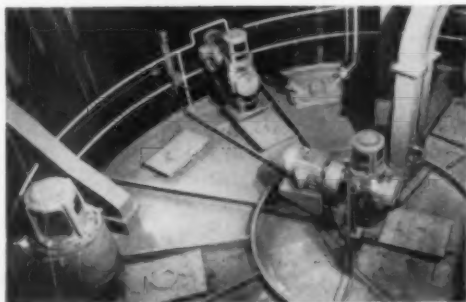
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## PEST ROUNDUP



by Kelvin Dorward

### New Screw-worm Infestations Discovered In Southeast

THE first screw-worm infestation this season in the southeastern eradication area, other than the case in Holmes County, Florida, in June, was discovered in a native animal near Vicksburg, in western Mississippi, August 15. Shortly thereafter, additional cases were found in the same area, and in De Soto County, which is in the northwestern part of the state. Later infestations were found in Tennessee, near Memphis, and in Franklin County in middle Tennessee on the Alabama line.

The first case in Alabama was reported from Madison County in the northern part of the state. Since the initial find in Alabama, cases have been found in numerous counties extending as far south as Russell and Bibb. Screw-worms have been found also in Georgia, where the first county being reported was Floyd. Dade County was reported infested on October 16.

Screw-worms continued to be a problem in Texas. By the latter part of October, fewer new cases were reported from the panhandle area than in recent weeks, but no decrease was noted elsewhere in the state. Infestations in Oklahoma also continued during October, in the southeastern and north central areas.

During late July and early August, specimens of the face fly were collected in small numbers in Summitt and Gilpin Counties, Colorado, on umbels at elevations of 8,500 to 10,000 feet.

The sorghum midge, which has caused concern in several states this year, was collected in Arizona for the first time October 3, in

Cochise County. Initial surveys showed that most unseasonably late-planted grain sorghum in the county was infested. Loss of 25 to 40 percent of the grain was common. Grain planted normally and in harvest stage by early October showed little damage. Later surveys found the midge in Graham, Greenlee, Pima, and Santa Cruz Counties. In northwestern Texas, the insect was in grain sorghum over an extensive area. There was local damage in late-planted sorghum. Specimens were collected also from sorghum heads in Jefferson County in southeast Texas. In Oklahoma, the midge was heavy in immature heads of grain sorghum in experimental plots in Payne County.

During October, the spotted alfalfa aphid continued to cause damage to alfalfa in Idaho. Populations were on the increase in the southwestern part of the state. Controls were necessary, and many newly planted, untreated fields were abandoned as a complete or near-complete loss. In southeastern California, heavy populations were present but increasing very little. By the latter part of October, the aphid was heavy in some alfalfa fields in the central and southwestern areas of Arizona. In Yuma County, however, the peak of the buildup apparently had passed. Diseased aphids were observed in most alfalfa fields of the county. Populations were on the increase in northern Utah, in areas of New Mexico, and were causing some damage in the Arkansas River Valley of Colorado. Light populations were reported from Ne-

This column, reviewing current insect control programs, is a regular feature of AGRICULTURAL CHEMICALS. Mr. Dorward is head—Survey & Detection Operations, Plant Pest Control Division, U. S. Department of Agriculture. His observations are based on latest reports from collaborators in U.S.D.A.'s pest surveys throughout the U. S.

braska, Kansas, Oklahoma, and Arkansas.

The greenbug was reported the last week in October from Oklahoma. The insect was light in sown wheat at Perkins, Payne County. The average was 10 per linear foot, but some counts ranged up to 30 per linear foot. Counts were light in volunteer wheat in Marshall County, but checks were negative in Garfield County.

In the intermountain region, the worst forest insect outbreak in history has been reported underway. Bark beetles were reported destroying 5 to 10 trees for every one killed in 1960. Aerial reconnaissance revealed the mountain pine beetle to be attacking an estimated 600,000 lodgepole pine trees throughout the region, especially along the north slopes of the Uinta Mountains, Wasatch National Forest, Utah. Spruce budworms were endangering some 300,000 acres of fir on Sawtooth, Challis, and Salmon National Forests, and heavily infesting 100,000 acres on Targhee National Forest in Idaho. In many areas, defoliation is so severe that aerial treatments may be applied to save timber stands. Bark beetles also were reported causing damage in local areas of California and Virginia.

In Texas, the southern pine beetle epidemic continues to be  
(Continued on Page 76)



## You can now kill brush on a year 'round basis

**The key: Dormant Cane Broadcast** — Scientists' concepts of chemical brush killing used to be that woody plants could not be effectively controlled with winter-month application. Diamond, however, sponsored research on this unique application method of brush control with the use of six-pound acid equivalent Line Rider formulations. The results speak for themselves:

- Materials needed reduced • Application time in

- hours per acre reduced • Kill effectiveness increased • Effective spray season lengthened • Hazard of crop damage eliminated • Unsightly brown-out eliminated.

Diamond's experience and specific formulation techniques with dormant cane broadcast can be of help to you. For details on dormant cane broadcast or six-pound Line Rider products, write Diamond Alkali Company, 300 Union Commerce Building, Cleveland 14, Ohio.



**Diamond Chemicals**





## PRODUCTION ROUND TABLE

*From Carton To Process*

### Automatic Unloader Cuts Costs

Through operations with a new carton unloader, dry materials can be unloaded directly into central slurry systems, batch tanks, or directly into grinders, beaters, or coating operations. It is expected to find its greatest use with bulk and semi-bulk users.

A NEW automatic carton unloader, developed for handling semi-bulk quantities of diatomaceous earth, cuts the cost of unloading operations by as much as 75%. Specifically developed by Vibra Screw Feeders Inc., Clifton, N. J., for Johns-Manville, the portable unit can handle up to 100 lbs. per minute of material and feed it directly from the carton to the process.



This view of the new automatic carton unloader, with the bottom face plate and gate removed, shows the holes that automatically are punched in the carton.

The Vibra Screw Feeder is a fully enclosed machine that accepts a carton containing up to 1200 lbs. of diatomaceous earth, holds it firmly in place, tilted at a 20° angle, punches two openings in the lower side, and then vibrates so that the dry material flows out in a continuous controlled stream. The rate of flow is adjusted by a manually controlled gate that allows any rate from zero up to the feeder's full capacity of over 100 lbs. per minute. The unit is fully enclosed to eliminate loss of material to surrounding areas. It is easily transportable by lift truck.

The new equipment makes automatic unloading available to users of dry materials without the investment in moving and space needed for pneumatic handling and storage of carload lots. Johns-



Rear view of the unloader, with the cover removed, shows the 1200-lb. carton in place.

Manville has developed a new carton for JM Celite that can be used with the automatic feeder or for manual unloading. The 54 x 40 x 60-in. carton holds up to 1200 lbs. of diatomite, as opposed to the 50-lb. bags in wide use. The cartons, which can be stacked three high, incorporate a self-contained pallet. Use of semi-bulk cartons considerably reduces costs of handling and waste.

Through operation of the carton unloader, dry materials can be unloaded directly into central slurry systems, batch tanks, or directly into grinders, beaters, or coating operations. As a diatomite unloader, it is expected to find its greatest use with bulk and semi-

*(Continued on Page 76)*

# NEWS ABOUT THE



## Dr. Farrar Joins Olin

Dr. Luther L. Farrar has been named market development representative for pesticides by Olin Mathieson Chemical Corp., New York.



Dr. Farrar's duties include pesticide sales development and technical service work, as well as direct sales in the southeast. His headquarters are in Athens, Ga.

Dr. Farrar formerly was head of the extension plant pathology department of the University of Georgia. Previously, he was assistant plant pathologist for three years at the Georgia State Experiment Station, Experiment, Ga.

## To Acquire Four Companies

The Philips Electronics and Pharmaceutical Industries Corp., New York, plans to purchase four chemical companies, with a combined annual sales volume of more than \$40 million.

Agricultural Chemicals, Inc., Llano, Tex., Ok-Tex Chemicals, Inc., Lubbock, Tex., and DePester Western Chemicals, Fresno, Calif., are three of the companies to be acquired. The fourth is Specifide, Inc., Indianapolis, Ind., a maker of animal feed products.

At the same time, Philips Electronics authorized the transfer of Thompson-Hayward Chemical Co. to Philips Electronics from Consolidated Electronics Industries Corp. Consolidated Electronics owns 67 per cent of Philips Electronics stock outstanding.

## Drop World-Wide Bidding

Officials of the Agency for International Development (formerly the International Cooperation Administration) have decided not to go through with plans to throw open the uncontracted portion of this year's fertilizer procurement program for Korea to

world-wide competition. As a result, American fertilizer manufacturers, who had protested the proposal, are being given another chance to supply the fertilizer needs of Korea under the mutual aid program without having to meet the lower-priced offerings of other nitrogen producing nations.

Last month, AID had asked for bids on \$7 million worth of fertilizer, the remainder of \$17 million in Korean aid fertilizer contracts which were offered for bids last Summer. The \$17 million originally was intended to be spent only in the U. S. but, when Japan offered urea and ammonium sulfate at prices about 40 per cent under American quotations, AID officials decided to re-advertise for these materials and invite Japan and other suppliers to bid.

## Government To Buy DDT

The Agency for International Development (AID) plans to ask for bids for possibly as much as 47 million pounds of DDT, to be used in the 1962 malaria eradication program of the World Health Organization.

## Heads Marketing Group

James S. Walker has been named manager of agricultural chemicals in the new marketing group of Hooker Chemical Corp.'s Eastern Chemical Division. The new marketing group is responsible for the division's marketing and development activities in the field of agricultural chemicals.



Mr. Walker joined Hooker in 1940. He became a technical representative in 1947 and, subsequently, has held positions of supervisor of technical service, manager of sales service, and most recently, manager of sales administration.

## To Move To Illinois

Jackson V. Vernon, vice president of marketing and research for FMC Corporation, New York, will make his permanent residence in Pittsfield, Illinois, early next year, following a vacation in Fort Pierce, Florida.



Mr. Vernon will be on special assignment to FMC, beginning January

1, 1962, and will continue to be attached to the corporate staff.

Prior to his appointment as vice president of FMC, Mr. Vernon had been president of FMC's Niagara Chemical Division. In addition, he served as president of National Agricultural Chemicals Association for three years.

## ASAE Winter Meeting

The Winter Meeting of the American Society of Agricultural Engineers will be held December 13 to 15 at the Palmer House in Chicago. The 1961 winter meeting will, for the first time, incorporate an exposition at which suppliers will exhibit their products.

## C-VPFA To Hear Caldwell

Harry W. Caldwell, chairman of the National Agricultural Advisory Commission, will address the convention of the Carolinas-Virginia Pesticide Formulators Association, Dec. 11 to 13, at the Carolina Hotel in Pinehurst, N. C.

Other speakers on the program include: Frank Goodwin, University of Florida; Claude Bryant, Dow Chemical Co.; J. Myron Maxwell, Maxwell Insecticide Co.; Robert L. Robertson, North Carolina State College; Wayne Corpening, Wachovia Bank and Trust Co.; and John Jordan, member of the North Carolina Agricultural Committee.

The theme of the meeting will be "Better Profits through Better Marketing."

AGRICULTURAL CHEMICALS

### Best Elects Harris



Harris



Wheless

John Harris has been elected president of The Best Fertilizers Co. of Lathrop, California, succeeding Lowell W. Berry, who has resigned that post. Mr. Berry is continuing as chairman of the board.

At the same time, R. Henry Wheless was elected vice president in charge of Best's fertilizer production.

In making public the personnel changes, Mr. Berry said, "The addition of Mr. Harris and Mr. Wheless to our organization follows closely our entry into industrial and agricultural chemicals, as well as our major activities in the production of commercial fertilizers."

Mr. Harris, since 1956, has been assistant general manager of the Davison Chemical Division of W. R. Grace & Co., Baltimore. Mr. Wheless had been staff assistant to the general manager of the Davison division.

### To Build Herbicide Plant

Spencer Chemical Co., Kansas City, Mo., is building a new plant for the production of specialty organic chemicals at its Jayhawk Works near Pittsburg, Kansas. The initial product of the new facility will be Carbyne herbicide.

Production of Carbyne is scheduled to begin next summer, with a capacity sufficient to supply Spencer's domestic and export requirements.

### Liquid Dealers to Meet

The Washington Liquid Fertilizer Dealers Association will hold its third annual meeting, December 11, at the Davenport Hotel in Spokane, Washington. A feature of the meeting will be a three-man panel discussion of the characteristics and fertilizer needs of Burt, Brevor, and Gaines wheats. Dr. O. A. Vogel, USDA agronomist; Dr. Fred Kahler of Washington State University; and Walter Nelson, director of the Dry Land Experiment Station at Lind, Washington, will be the participants on the panel.

"Evaluating Farmer Credit" will be discussed by E. F. Brandt,

vice president of the Old National Bank, Spokane. Glenn Loring of *The Farm Journal* will speak on "How Do You Look To Your Customer?" Effective dealer advertising will be covered by Jack Huntington of Walla Walla.

Gerald Davis, Ralston-Purina Co., will speak on dealer-customer relations, and a discussion of the economics of fertilizer use from the farmer's point of view will be presented by Dr. Jay P. Swanson of the WSU Ag-Econ. Department.

### Vulcan Buys Kolker

Vulcan Materials Co., Birmingham, Alabama, has purchased Kolker Chemical Corp., Newark, N. J., and will make the new acquisition an affiliate of another Vulcan subsidiary, Frontier Chemical Co., Wichita, Kansas. Vulcan's president, Bernard A. Monaghan, points out that Kolker's product lines both augment and complement the product lines of Frontier, and it will provide Frontier with East Coast manufacturing and marketing facilities.

### Weed Society Of America Meeting In St. Louis, Dec. 11

**S**PEAKERS for the general session of the Weed Society of America meeting in St. Louis December 11-14 were announced last month by program chairman G. F. Warren of Purdue University.

Opening the general session of the afternoon of December 11 will be Dr. K. P. Buchholtz of the University of Wisconsin. His presidential address is entitled "Weed Control—A Record of Achievement."

Dr. J. Van Overbeek, Shell Development Co., Modesto, Calif., will follow with a discussion of the physiological response of plants to herbicides. Dr. Lela Barton, Boyce Thompson Institute of Plant Research, Yonkers, N. Y., will speak on weed seed physiology. Dr. Noel S. Hanson of the Hawaiian Sugar Planters Association will speak on weed problems

### Form Distributing Company



Stoddard



Rivers

John R. Stoddard, formerly vice president in charge of sales for Prentiss Drug & Chemical Co., and Ernest W. Rivers, formerly manager of the industrial chemical products department of Stauffer Chemical Co., have organized Monaco Chemical Industries, New York, for the distribution of agricultural chemicals, heavy industrial chemicals, industrial insecticides, and pharmaceutical compounds. Offices of the new firm are at 161 East 42nd Street, New York 17, N. Y.

### Heads Ris-Van Division

J. L. Rainey has been appointed manager of the Ris-Van division of Armour Agricultural Chemical Co., Atlanta. Mr. Rainey joined Ris-Van at its Belmond, Iowa, headquarters, in 1960 as sales manager. Previously, he was midwest sales supervisor for the Nitrogen Division of Allied Chemical Corp.

and research with herbicides for control of major weeds in sugar cane.

Recent advances in witchweed control will be described in a paper delivered by Dr. Warren C. Shaw, Agricultural Research Service, U. S. Department of Agriculture, Beltsville, Maryland. A tour of the research facilities of the Monsanto Chemical Company is scheduled following the general session.

Speaker for the society's annual banquet will be Dr. E. J. Wellhausen, an associate director of the Rockefeller Foundation. He will speak on "Weed and Man in Latin America."

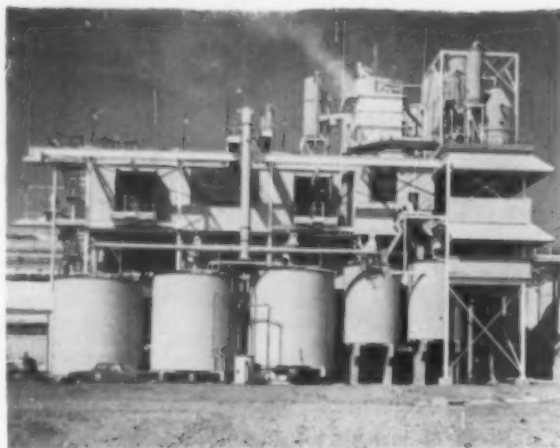
During the four day-meeting, other speakers will discuss numerous aspects of weed control. Hosts for the meeting at the Jefferson Hotel are the North Central Weed Control Conference.

## Swift Phosphoric Acid Plant Is Operating At Bartow, Florida

This phosphoric acid producing plant has been completed and is in operation at the Swift & Company Phosphate Center, south of Bartow, Fla. The plant was constructed by Dorr-Oliver Engineering Ltd., of Stamford, Conn.

W. F. Price, general manager of Swift's Agricultural Chemical Division, said construction of the plant is a part of the company's long-range expansion in the chemical field.

Swift has had phosphate mining operations in the Bartow and Fort Meade areas for a number of years, and has a triple super phosphate plant in connection with its mining operations. The new facilities will permit substantial



increases in the production of triple super phosphate.

Swift also has under construction at the Florida site a new contact sulfuric acid plant, which is expected to be completed in April, 1962.

## Beltwide Cotton Conference

The fate of herbicides in plants and soils will be discussed by Dr. T. Jack Sheets, Plant Physiologist, Crops Research Division, ARS-USDA, Beltsville, Md., at the 1962 Beltwide Cotton Production-Mechanization Conference, January 11 and 12, at the Peabody Hotel, Memphis, Tennessee. In addition, a panel will discuss new leads in weed control. Members of this panel will be: Dr. John T. Holstun Jr., Crops Research Division, ARS-USDA, Stoneville, Miss., "New Herbicides"; Tom E. Corley, Agricultural Engineering Department, Auburn University, "Chemical Application Equipment"; and J. Gordon Futral, head of the Department of Agricultural Engineering, Georgia Agricultural Experiment Station, University of Georgia, Experiment, Ga., "Mechanical Methods of Weed Control."

The current status of pink bollworm research is to be the topic of an address by Dr. Dial F. Martin, Entomology Research Division, ARS-USDA, Brownsville, Texas. Dr. J. R. Brazzel, Department of Entomology, Texas A&M College, College Station, Texas, will discuss diapause as related to

boll weevil control. In addition, Lambert H. Wilkes, Department of Agricultural Engineering, Texas A&M, will discuss the problems and advantages of bottom defoliation.

## Wisconsin Pesticide Conf.

The 16th annual Wisconsin Pesticide Conference with Industry will be held January 4 and 5 in the Wisconsin Memorial Union Building, University of Wisconsin, Madison.

## Heads Will-New York

Joseph A. Molchan has been appointed general manager of Will-New York, Inc., the Will Corporation's New York laboratory supply house. Mr. Molchan joined the corporation in 1957. In 1960, he was appointed general manager of Will's Buffalo subsidiary.

## Seek Extension Specialist

The Department of Entomology, University of Wisconsin, Madison, has announced that a staff position as extension specialist is available. Applications are solicited from qualified entomologists interested in the appointment. Professional rank and salary

will be dependent upon qualifications, the department said. The position will involve full-time extension, and will cover entomological problems related to fruits, vegetables, trees, ornamentals, and flowers.

Interested persons are asked to apply for details to the chairman of the Department of Entomology, 200 King Hall, University of Wisconsin, Madison 6, Wisc.

## Expands New York Sales

Union Special Machine Co., Chicago, has created an additional sales territory within its New York district, specifically in the metropolitan New York area. The new sales territory, which includes Manhattan north of 34th street, the Bronx, Yonkers, and Mt. Vernon, is being handled by Anthony Candell. Mr. Candell joined Union Special in July, 1959.

In another move, the company appointed G. E. Smith as sales representative to serve in the Columbus, Ohio territory. He replaces Frank B. Stone. Mr. Smith joined the company in 1956.

## Warren Joins Chemagro

Dr. Jack W. Warren has joined Chemagro Corp., Kansas City, Mo., as research field representative. He has been assigned to the company's Pacific Northwest and Canadian regions, and makes his headquarters in Yakima, Washington.

## Heads TVA Division

Dr. Gerald G. Williams has been appointed director of the Tennessee Valley Authority's division of agricultural relations at Muscle Shoals, Alabama. He succeeds Dr. Leland G. Allbaugh, who retired last October.



In his new post, Dr. Williams is responsible for developing and administering plans and projects for the evaluation of new TVA fertilizers, their introduction to farmers, and their effective use throughout the U. S. Prior to joining TVA last February, Dr. Williams was a soil scientist with the Agricultural Research Service.





## *Diversity of Dow products and packages matched by versatility of FMC Auger Fillers*

A diverse group of chemical products produced by the Dow Chemical Company are packaged by FMC Auger Fillers in a variety of container types and sizes. Insecticides, pesticides and similar chemical specialties varying greatly in density and flow characteristics are accurately filled with this type of equipment in Dow's plant at Midland, Michigan. Containers include bag sizes holding from 1 lb. to 20 lbs. of product and cans ranging from ½ lb. up to 4 lbs.

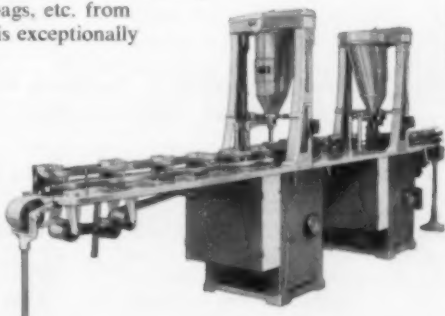
Among the FMC equipment used by The Dow Chemical Company is an Automatic Tandem Filler model HG-85, as illustrated. Completely automatic, it is available with a choice of filling methods—cam volumetric for complete fill at both stations; cam volumetric at one station and gross weighing at the other for bulk and dribble fill; or vacuum for pack filling dusty products—at speeds up to 70 containers per minute. • Many other models are available for large or small plants, automatic or semi-automatic operation, tight or loose fills, long or short runs to handle powders, granules and certain pastes. • Production-run accuracy has proved outstanding in filling cans, jars, boxes, bags, etc. from 1/16 oz. to 20 lbs. Changeover for product and size is exceptionally fast and simple. Speeds as high as 140 per minute.

For the whole story of how FMC Auger Fillers can improve your packaging, write for Bulletin P-811.



**FMC CORPORATION**  
PACKAGING MACHINERY DIVISION

Stokes & Smith Plant: 4900 Summerdale Avenue, Philadelphia 24, Pa.



## Niagara Advances Johnson

Dr. Oscar Johnson has been appointed marketing director of the Niagara Chemical Division, FMC Corp., Middleport, N. Y. He had been assistant to the division manager. In his new post, Dr. Johnson is primarily concerned with Niagara's proprietary chemicals (and formulations incorporating them) such as Tordon miticide, Thiodan insecticide, and Ethion.

Dr. Johnson joined Niagara as a research chemist in 1946. Prior to this he was with Merck and Co. at Rahway, N. J.



## 2nd Interore Trade Seminar

International Ore and Fertilizer Corp., New York, is sponsoring a second International Trade Seminar at the Savoy-Hilton Hotel in New York, December 6 through 8. The seminar will concern itself

with world supply and demand of fertilizer and fertilizer raw materials.

## Royster Advances Powell

G. O. Powell, sales manager for F. S. Royster Guano Co., Madison, Wis., has been named assistant general sales manager for the Norfolk, Va., based firm. He succeeds George G. Miller, who died last July.

## U. S. Borax Advances Turner

James R. Turner has been named assistant director of plant food chemical sales for United States Borax and Chemical Corp., Los Angeles.

Mr. Turner, who joined U. S. Borax in 1952 as an agronomist, has been serving as manager of plant food product development.

## Ultra Names S. K. Friedman

Ultra Chemical Works, Inc., a division of Witco Chemical Co., New York, has appointed S. K. Friedman as manager of product planning and application. Mr. Friedman had been advertising manager for Witco. He joined Witco in 1957 as assistant to the sales manager of Emulsol



products.

G. Thomas Catherine has been named to succeed Mr. Friedman as advertising manager for Witco. Robert Lanino has been named assistant advertising manager.

## To Develop Reserves

International Minerals & Chemical Corp., Skokie, Ill., and Husky Oil Co. have agreed to develop phosphate reserves in Idaho estimated at 50 million tons. The reserves, owned by Husky, are located near Soda Springs, Idaho, and constitute one of the largest known reserves of surface mineable phosphate ore in the United States.

The agreement between IMC and Husky Oil allows up to five years for development of a final plan for undertaking the joint venture.

## Chemical Marketing Meeting

A day-long program devoted to talks and panel discussions about various phases of chemical marketing and purchasing will be held February 1 at the Hotel Roosevelt in New York. The meeting will be jointly sponsored by the Chemical Buyers Group of the National Association of Purchasing Agents and the Salesmen's Association of the American Chemical Industry.

## California Weed Conference

The 14th annual California Weed Conference will be held January 23 to 25 in the Hotel Sainte Claire, San Jose, California. The conference will feature talks on weed control in agricultural crops, home grounds and turf, and industrial sites. Other topics to be covered will include application problems and the legal aspects of weed control.

## Dollar Value Of U. S. Pyrethrum Imports Rises Steadily

The dollar value of U. S. pyrethrum imports has risen from \$2,988,792 in 1956 to almost \$6,000,000 in 1960. The rise has been steady each year, except for a drop in 1957 (see table 1).

Practically all of the imports are from the three sources cited below: British East Africa, the Congo, and Ecuador. Among the notable trends in the importing of pyrethrum are the shift from flowers to extract and the steady growth of the pyrethrum industry in British East Africa and Ecuador,

brought about by the African supply situation. Ecuador accounted for only 5 per cent of imports into the U. S. in 1959. This rose to 54 per cent in 1960 and was 74 per cent in the first 8 months of 1961. Trends affecting the African pyrethrum situation are restrictions on exports of unextracted flowers and delays in construction of extraction facilities, as well as explosions at some facilities, because of the African political revolution.

The first 8 months of 1961 are compared with 1960 in Table 2.

Table 1. Dollar Value of U. S. Pyrethrum Imports

Total (flowers plus extract) by years

	Total	Brit. East Africa	Congo	Ecuador
1956	\$2,988,792	\$1,650,938	\$1,194,859	\$64,629
1957	2,554,433	1,403,560	1,037,329	82,815
1958	3,814,111	2,529,250	822,889	151,005
1959	5,295,042	2,963,201	2,027,059	167,093
1960	5,877,838	3,771,901	1,651,946	300,345

Table 2. Dollar Value of U. S. Pyrethrum Imports  
(first 8 months of 1960 and 1961)

	1960			1961		
	Flowers	Extract	Total	Flowers	Extract	Total
All imports	\$269,500	\$3,722,310	\$3,991,810	\$1,177,402	\$4,106,219	\$5,023,621
British East Africa	179,200	2,427,427	2,606,627	931,482	3,523,948	4,455,430
Congo	0	1,159,190	1,159,190	157,158	300,599	457,757
Ecuador	84,365	97,933	182,298	85,576	239,240	324,816
Other	5,935	37,760	43,695	3,186	42,432	45,618

Your use of FTE (Fritted Trace Elements) is

# S-P-R-E-A-D-I-N-G



**ONCE A REGIONAL SPECIALTY . . .** FTE is helping produce better crop-yields this year in more than *forty* states. The big bulk of it is going into general high-productivity fertilizers, used on a wide variety of crops.

Containing all six minor elements—*boron, iron, zinc, copper, manganese and molybdenum*—FTE provides *protection* against secondary trace-element deficiencies while remedying specific soil problems. And but little is needed—often no more than 1% mixed into good fertilizers.

Unlike soluble salts that leach out in heavy rains, or become fixed in the soil under certain conditions, FTE releases the nutrients as needed *all through*

*the growing season.* “Fritting” makes possible controlled, predetermined solubility. This, in turn, makes fertilizers more productive, more predictable, irrespective of growing conditions.

Ground almost talcum-fine, FTE mixes easily with other fertilizer ingredients. It will not cake or settle in storage and handling. Being *slow-soluble*, it presents no toxicity hazards—so can be *safely used anywhere, on all crops*, simplifying both manufacturing and marketing for fertilizer manufacturers.

There are many reasons why you should thoroughly investigate FTE before going into another selling season. Time is short. You have much to gain. Write for complete information and prices.



**FERRO CORPORATION** *Agricultural Division*

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## Armour Sets Target Date For Completion of Cherokee Complex



Shown is a view of the ammonia plant at Armour's nitrogen fertilizer complex under construction at Cherokee, Alabama. This plant is scheduled for completion in mid-March, 1962. On a tract of 1,200 acres near Cherokee, the new Armour complex will provide employment for about 250 persons.

Armour Agricultural Chemical Co. plans to start operations at its nitrogen fertilizer complex by mid-March. The complex now is under construction at Cherokee, Alabama (See *Agricultural Chemicals*, June, 1961, page 23).

Facilities for production of ammonia and other nitrogen products are scheduled to be in full-scale operation by mid-March. Ammonium phosphate production is slated to start in April, 1962.

The new Armour facilities will include the largest single train ammonia plant in the world. The complex is located on a 1,200-acre tract of land at Cherokee, in the northwestern part of Alabama,

about 15 miles from the point where the corners of Alabama and Mississippi touch the southern edge of Tennessee.

The complex is part of a \$60,000,000 expansion program currently being undertaken by Armour, a division of Armour and Company, of Chicago. In addition to the Cherokee project, the program includes construction of a phosphate plant near Fort Meade in Polk County, Fla. The company also is undertaking an extensive modernization program for its existing fertilizer mixing plants. There are 35 of these plants located in the United States, and one in Puerto Rico.

## EDITORIAL

(Continued from Page 15)

sensation of such facts by the fertilizer industry that caused AID to cancel its proposal and to give American producers another chance to supply the fertilizer needs of Korea.

Other facets of the American business community might profit from this experience. The time to stop unfavorable legislation or bureaucratic action is before it happens. And, the way to do it is to present a sound and factual argument for industry's side of the question. As the first Hoover Commission said: "No king ever wielded a scepter more powerful than a

five-cent pencil in the hands of an American citizen when he sits down to write to his congressman."

### Augments Sales Force

West Virginia Pulp and Paper Co., New York, has made two additions to its sales force in the West and Midwest. Robert J. Gigler has been appointed special account executive for the western district, Torrance, Calif., and David D. McClintock has been appointed sales representative for the Chicago district.

### Dedicate Research Center

Monsanto Chemical Co., St. Louis, has officially opened its new research center in suburban Creve

Coeur, Missouri. The center, which covers almost 11 acres, includes six new buildings and two previously-completed laboratory buildings.

### Safety Training School

The Supervisory Safety Training School for fertilizer plants in the Northeastern States Region will be held in New York, December 7 and 8. Sessions are to be held in the French Building on 551 Fifth Avenue.

The program has been divided into three units to cover supervisory training, fire protection, and hazardous liquids and materials. Among the speakers will be Professor Harlan B. Perrins, N. Y. State School of Industrial and Labor Relations; E. O. Burroughs Jr., F. S. Royster Guano Co.; Elmer Perrine, Allied Chemical Corp.; and W. C. Creel, North Carolina Dept. of Labor.

### Frontier Advances Stedman

Howard A. Stedman has been named sales manager for agricultural chemicals by Frontier Chemical Co., Wichita, Kansas. Mr. Stedman retains responsibility for grain fumigant sales, a post he has held since 1957, and, in addition, supervises sales of pentachlorophenol and benzene hexachloride. Richard H. Barton is assistant sales manager for agricultural chemicals.

### H. G. M. Jacobson Retires

H. G. M. Jacobson retired last month from the Connecticut Agricultural Experiment Station, New Haven, after 35 years of service there as an authority on Connecticut soils and their treatment.

## ANTIRESISTANT DDT

(From Page 23)

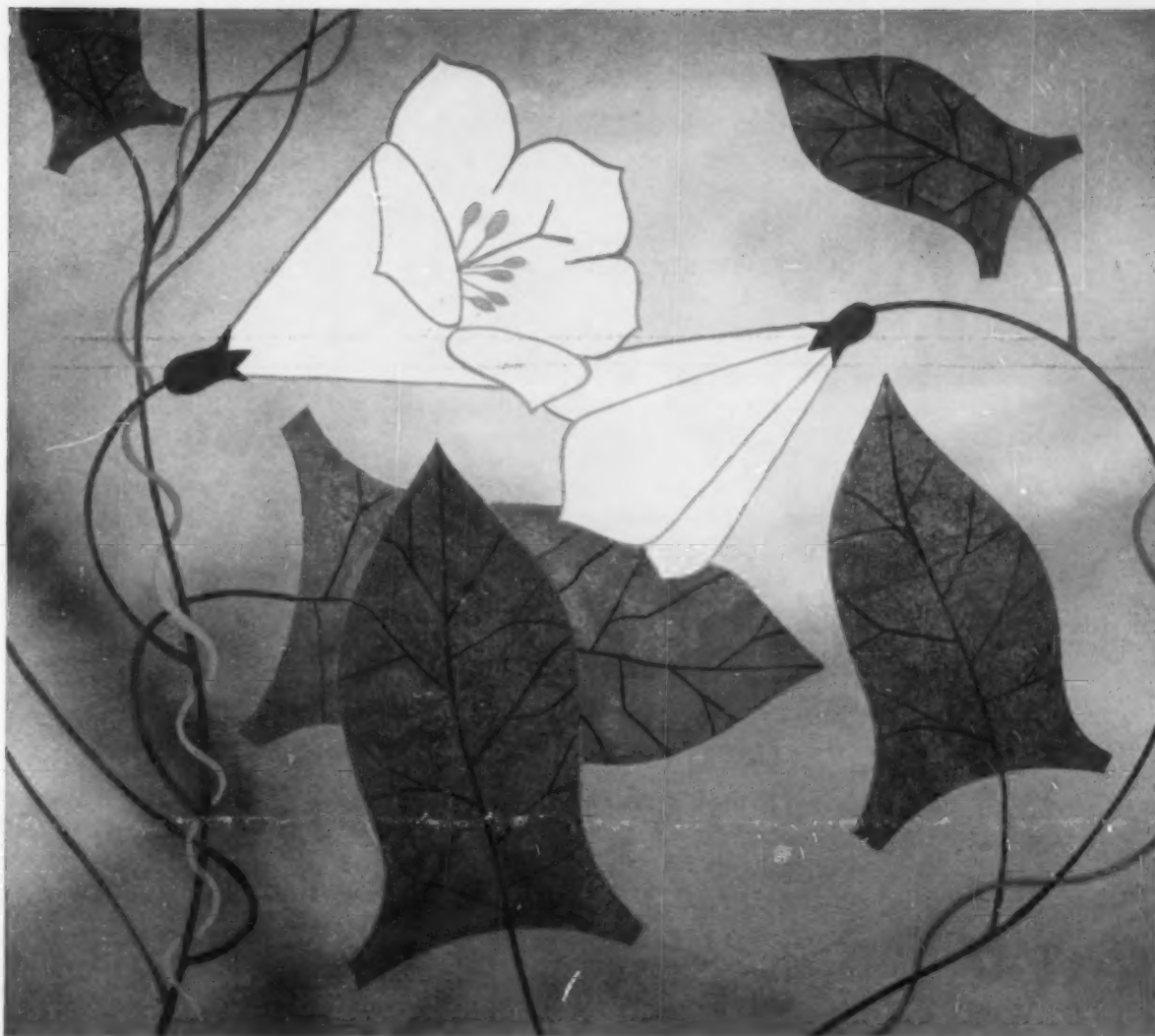
oxychlor, perthane and TDE, which had been anticipated since all three are analogs of DDT.★★

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2. Fales, J. H. and Bodenstein, O. F., Soap and Chemical Specialties, v.

## AGRICULTURAL CHEMICALS





# CONTROL BINDWEED

## WITH OLDBURY® SODIUM CHLORATE



Oldbury sodium chlorate was the most effective weed killer when it was first placed on the herbicide market thirty-five years ago... and it's still the most effective you can use today on such trouble-makers as bindweed, Johnson grass, Canada thistle, and Russian knapweed.

Oldbury sodium chlorate *sterilizes* the soil... reaches right down to the roots of the weed... and keeps working for months.

Oldbury sodium chlorate is inexpensive. For a mere 25¢, you can sterilize 100 square feet of drain-

age ditch, fence line, or roadway.

**Open-head drum empties easily.** Oldbury sodium chlorate comes in a fast-opening drum. A single lever seals and reseals the drum with a metal band. Full-open head makes pouring, scooping, or shoveling easy.

Available in 50-, 100-, and 450-lb. sizes.

**Technical aid.** Full-time Hooker agronomists can help with weed control plans and advise on handling, storing, and using sodium chlorate. Write for descriptive folder.

### HOOKER CHEMICAL CORPORATION

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Sales offices: Buffalo, Chicago, Detroit, Los Angeles, New York, Niagara Falls, Philadelphia, Tacoma, Worcester, Mass. In Canada: Hooker Chemicals Limited, North Vancouver, B.C.

DECEMBER, 1961

71

- 37, No. 11, pp. 77 et seq. Nov. 1961  
 3. U. S. Letters Patent 2,974,083 to Moshe Neeman, Mar. 7, 1961, assigned to Wisconsin Alumni Research Foundation.  
 4. Technical Report N2-E2(1260), Wisconsin Alumni Research Foundation, 1960.

## MATERIALS HANDLING

(From Page 31)

be placed on the tank car to overcome the pressure drop incurred from the tank car to process. If the additional working pressure is not sufficient to overcome this pressure drop, a portion of the free ammonia in the solution will vaporize, causing inaccurate metering and perhaps even "salt out" and give the false impression that the tank car is empty. Inadequate working pressure on a tank car can also produce uneven sparger distribution in the ammoniator, which can, of course, result in poor ammoniation rates as well as poorly conditioned product.

To determine if tank car is completely empty, it is recommended that a tee fitted with a small valve be placed in the liquid line, as close to the unloading riser as possible. As the tank car approaches emptiness this valve can be opened to determine whether solution is still flowing—or whether air pressure from the tank car is now flowing through the liquid line. This technique is valid, said Mr. Anderson, only if adequate air pressure is on a tank car throughout its unloading. It is also assumed that the tank car is mechanically sound.

### Pneumatic Handling

Use of pneumatic equipment was discussed by John Fisher, Sprout Waldron Co. and R. M. Geisenheyner, Butler Manufacturing Co. Mr. Fisher reviewed the general operation of pneumatic systems, while Mr. Geisenheyner reported specifically on truck transportation of dry flowables. The latter speaker advised that in pneumatic unloading of trailer tanks the air source is normally a

rotary blower or piston compressor mounted either on the trailer or the tractor. In some cases, it is located as a stationary piece of equipment at the unloading site.

Trailer mounted blowers are driven by internal combustion engines of about 70 hp capacity. These blowers have an input in the neighborhood of 400 CFM, when operated at 2800 rpm and 15 psi.

Mr. Geisenheyner indicated that dry bulk products are commonly delivered into storage silos in excess of 150' elevation—or 200' horizontal distance without problems. Coarse granular fertilizers, he said, might be handled at 1000 lbs/minute, — while light weight particles will discharge at 1800 lbs/minute.★★

## MULTIWALL SACKS

(From Page 31)

quest him to make a study of the different sack widths he is using to determine if there could be some degree of standardization of his sack widths which could possibly give his company the benefit of worth-while economies, and also assure better service from his sack supplier."

"Design of a multiwall paper shipping sack is not an exact science," stated W. L. Shoemaker of International Paper in reporting on the various factors to be taken into account in bag design for the fertilizer plant. There are three basic bag styles or types of bags being used today to pack fertilizer: the sewn open mouth, the sewn valve, and the pasted valve type bag. Of the pasted valve type, there are two different designs: the conventional flush cut type and the pasted valve stepped end type—an offspring of the conventional pasted valve which is very popular. Generally speaking, local plant production methods, handling and/or shipping conditions as well as bag construction,—normally dictate the type which may outperform the other three types.

Reviewing the past record,

Mr. Shoemaker observed that in 1955 the Multiwall Paper Shipping Sack Industry produced a total of nearly 194 million Sewn Valve fertilizer paper shipping sacks. This total includes all bag sizes: 25's, 50's, 80's and 100 lb. bags. In 1960, this figure dropped to a total of 72 million Sewn Valve bags of all different sizes . . . a drop of over 62%.

"In 1955, nearly 193 million Sewn Open Mouth bags were produced for the fertilizer industry . . . again the total includes all bag sizes and capacities, but by 1960 the total for Sewn Open Mouth type paper shipping sacks had grown to 246 million bags . . . an increase of 53 million bags or 27%.

"The next are interesting figures to note: in 1955, the total for Pasted Valve paper shipping sacks of all sizes was only a little over 3½ million bags, but in 1960, this figure had risen to nearly 65½ million bags . . . an increase of over 1,700%—and is still climbing. In other words, the growth in total numbers of Pasted Valve bags and Sewn Open Mouth bags, almost made up for the losses incurred in the numbers of units of Sewn Valve bags." It should be kept in mind, however, that in the past few years there has been a trend toward the smaller capacity bags, away from the 100 lb. size. For instance, the 25 lb. and 50 lb. bags are now quite popular.

Mr. Shoemaker observed that among the most important reasons for the fertilizer industry to swing a large portion of its bag requirements from the sewn valve type to the pasted valve type are: (1) advent of the stepped-end bag, (2) ability to use safely either asphalt laminated or polyethylene coated paper in a pasted type bag; and (3) appearance—the pasted valve bags, whether conventional type or stepped-end look better when filled or stacked on a pallet or skid, and brand name printing on the butts and valve ends shows up better in a stack.

The use of moisture barrier plies in multiwall bags has in-

# "Well Pleased After One Year of Operation ... Sales Increased FOUR TIMES" Says W. C. Alexander,\* Beaman, Iowa



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October 1, 1961

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Attention: Mr. Oliver Haley, President  
Dear Mr. Haley:

As we have had our Blend-O-Mixer plant in operation for well over a year, I wanted to tell you how pleased we are with its performance. It has made it possible for us to increase this year's dry sales four times over last year's sales.

Prior to building the dry blending plant, we operated a liquid mixing plant and an anhydrous ammonia plant. The addition of the dry plant has put us in the position of being able to give our customers any type of material we might desire or a combination of the dry, liquid and anhydrous ammonia.

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We have had numerous visitors during the past year who have stopped in for the express purpose of learning how we liked the plant, how well it works, cost of operation, price of raw materials, profits and many other things. I am glad to report that we have been able to give a positive answer to these questions.

Our best wishes for your continued success in this field as we feel that you have made a great contribution to the fertilizer business.

Yours very truly,  
ALEXANDER ENTERPRISES  
*W. C. Alexander*  
W. C. Alexander



\*One Of 54 Blend-O-Mixer Plant Installations In 11 States - Completed To Date.



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creased steadily over the past few years, continued the speaker. For fertilizer, asphalt laminated is still the most widely used moisture-vapor proof paper used as a ply today. Polyethylene coated ply has been developed in recent years,—and this takes the place of some asphalt laminated paper—in bags for packaging the more critical and expensive agricultural chemicals.

Polyethylene coating paper is a better moisture barrier than asphalt laminated paper,—it also has other properties which are quite desirable, such as grease resistance and resistance to acid or alkaline attack . . . as a rule, however, polyethylene coated paper, even in the light weight coatings, has in the past been more expensive than asphalt laminated.

Bagging and bag handling operations in the very near future will include many automatic aids to perform simple functions, remarked R. A. MacDonald, Bemis Bag Co., who noted that devices such as an automatic actuator, and an automatic threader will be prominent in the early improvements. An automatic bag raiser to lift bags to be filled,—and an automatic bag placer are still two more aids which will cut labor and handling costs in fertilizer bagging, weighing and handling operations.

J. H. Dively, St. Regis Bag Co., reported on planning warehousing for a fertilizer plant, taking into account layout, location, etc., to allow maximum efficiency and minimum cost. A good warehousing system will contribute to better service and lower cost, he observed.

In consideration of any new system of materials handling, he pointed out that the major objectives are: (1) to move high tonnages, (2) at low handling costs per ton, (3) with flexibility to assure customer service fast and efficiently. He suggested use of a conveyor trucking system, which he pointed out, (1) retains the flexibility of hand trucking; (2) divorces packing from shipping, making possible longer runs in the packing operation; (3) improves

customer service and (4) provides maximum tons/man hour.★★

## NEW PESTICIDES

(From Page 56)

Elgetol 20 or Krenite, Dinitro-Wetttable, DN 289 and Elgetol 318 are most effective when applied at the time of 60% to 75% of the blossoms are open. Less thinning results if the chemicals are applied later, but if the temperature drops to 30° or below, or prolonged periods of wet, humid weather follow applications of the dinitro sprays, much more thinning will occur.

Because thinning results will vary from orchard to orchard, and even within the same orchard from year to year, Dr. Westwood suggested that the materials be tried on a test basis at first by the individual orchardists.

On self-fruitful varieties, 1½ to 2 pints of Elgetol or Krenite per 100 gallons was suggested. For self-sterile varieties such as J. H. Hale, 1 pint should be sufficient. Where other chemicals are used, the formulation would be varied in the proportion of 1 pint of Elgetol 20 equalling ½ pint of DN 289 or Elgetol 318, and equal to ½ pound of 40% Dinitro wetttable.

Where frost or wet weather following chemical application is a special hazard, Dr. Westwood suggested naphthyl phthalamic acid (NPA), which should be applied at the rate of 200 to 250 ppm from five to eight days after full bloom. Sprays applied later than this may cause leaf injury and will fail to produce satisfactory thinning results.

Over-thinning may result if cool, wet weather follows the spray application, he pointed out. NPA is available commercially as ACP Peach Thinn 322 or Nip-a-Thin.

He advised against using semi-concentrate applications, and declared that hand guns, which permit operations to skip weak trees and allow them to spray the tops of other trees more heavily, are superior to airblast machines in chemical thinning on peaches.

Two agricultural chemical company representatives were elected officers of the Oregon State Horticultural Society at the organization's final business session. They are William J. Vollmer, Jr., Parkdale, Miller Products Co., elected first vice president, scheduled to be president next year, and Dan W. Young, Eugene, Niagara Chemical, third vice president.

James Smart, Salem, director of the state department of agriculture, succeeded Stephen G. Nye, Medford, as president. Second vice president is Paul Culbertson, Medford; Dr. Andrew A. Duncan, OSU extension vegetable production specialist, is secretary, and Paul J. Willard, Salem, is treasurer.

Charles Carr, Dayton, who produced 74 tons of strawberries on nine acres, averaging a ton per acre more than his nearest competitor, was proclaimed "King Strawberry."

Ray R. Reter, Medford, former president of the International Apple Association, received the Hartman cup, (named for Professor Emeritus Henry Hartman who originated the Hartman wrap for pears—among other things), for his life-long work for horticulture.★★

## IMC SEMINARS

(From Page 20)

happen just because he recognizes that crop rotation is a good farming practice and, therefore, rotates his crops. Nor is it going to happen by his doing a superb job of properly fertilizing for the particular crop he's growing—though, admittedly, either or both of these are steps forward.

"It takes more than that—it takes a careful, keen look at this *total farming operation* and a thorough job of setting up a balanced production program that will give the farmer the best results. This is not just crop-production thinking—this is *farm business thinking*. It means setting up a long-range plan for making his capital investment do all it can to maintain and improve itself. It



may mean a combination of animal raising and crop growing, or it may mean some combination of intensive single crop raising.

"'Long-range' always sounds idealistic when your problem is how to make more sales right now. Long-range is fine, but tomorrow I've got to eat. If you will recall, we have shown you how you can get the extra sales right away and be building this long-range market at the same time, in the *same sales*, to be exact.

"We also mentioned 'business thinking.' You're probably wondering if we're suggesting that you take up farm management. Rest easy. We're not. Your job is still **selling plant food**. We mentioned 'business thinking' just to suggest the overall idea of Fertility Programming. Through your Service Selling you will be interesting the truly potential farmer in the idea of setting up production on a planned basis. This will come as a natural result of your having worked your way to that point with him over a period of having served him as your customer. You will have reached the point where he is coming to you for help with planning plant food needs for crop changes he may have in mind for more than a year ahead. During this planning, you will suggest that his long-range plans for his whole farm might have a bearing on the decision he is trying to make. You will discuss with him the economic value of planning for more than the single crop year—including maintaining and increasing the economic value of his land.

"If he wants to explore the possibilities of long-range planning with you, maintain your role as plant food consultant—not farm management consultant. Bring in your local farm specialist—County Agent, or whomever he may be—for that. Let him help your farmer work out the crop and maintenance program. You help them by providing the specifics of plant food needs. The only difference from your present handling of crop needs will be that, in the

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cases like this, you will be working with the knowledge of the long-range goals for that land, and you will be able to recommend applications that will both produce a current highly profitable yield and keep the land at peak fertility level at controlled cost.

"How do we do this?

"The Fertility Program idea is the framework of all your Service Selling. In actuality, it is not *something you sell*—it is a method of selling. You begin with the knowledge that a Fertility Program is the one thing that will bring the farmer his highest continuous return. Knowing this, you are going to do him the service of gradually building him into a manner of making his plant food purchases that is based on planning, and that, in as many cases as possible, ultimately is based on complete Fertility Program Planning. It means doing your day-to-day selling in such a way that you are constantly building your customers into this pattern."★★

## CORNELL

(From Page 41)

ous residues and drift on bees and other beneficial insects as well as on livestock and man. Last, but not least, one must consider insecticide residues and deposition of them in the body fat of dairy cattle and their secretion in the butterfat of milk.

Although there are a large number and variety of insect pests on forage crops in New York, the basic program of control is essentially one of two applications—one on each cutting of hay. Where three cuttings are practiced, an additional application may be needed for leafhopper or alfalfa weevil control on the third cutting.

With the cost of some insecticides about one to two dollars per acre per treatment, dairy farmers should be just as willing to treat good legume hay as an insurance of a good crop as they are willing to lime or fertilize for a good crop. In most years, New York

farmers will find it profitable to treat their meadows and pastures for insect control.

In addition to specific pesticide recommendations for insect control on forage crops, the recommendations review what application equipment to use, how to clean weed sprayers for use with insecticides, how to check for insects, and how to calculate the necessary amount of insecticide to apply per acre.

### Ornamentals

Recommendations listed in the section on control of insects and mites on woody ornamental plants are intended for commercial nurserymen and arborists, commercial spray specialists, farm foresters and others involved with large scale insect control operations. Two major sections consist of: (1) Insects and Mites—timing for applying sprays; materials recommended for control. (2) limitations and advantages of chemicals recommended for control, and discussion of special problems.

It is emphasized that particular attention be given to the toxicity and hazard involved in use of all pesticide chemicals. A useful guide to the toxicity of spray chemicals is the type of precautionary statement given on the label. Most chemicals are in one of three categories: caution, warning, or poison. The "poison" statement is always accompanied by a skull and crossbones. Such materials are recommended for use by *Commercial nurserymen only* on stock grown in private nurseries. They are not recommended for general spraying or treatments in public areas around homes or other habitations.

For control of insects and mites in parks, on city streets, near residences, in recreational areas, or other public places, spray chemicals bearing a "caution" statement should be used wherever possible. Those bearing a "warning" label should be used only as recommended for special problems and where other, less toxic chemicals will not give effective control.★★

## FACE FLIES

(From Page 39)

and a commercial face fly repellent containing pyrethrum which he said must be applied daily. Ontario farmers, Mr. Dalrymple said, have had the most practical success with a horizontal backrubbing device using toxaphene and oil. This, he reported, affords the cattle relief from weeping, and somewhat reduces the flies' target.★★

## AUTOMATIC UNLOADER

(From Page 63)

bulk users, such as in the fertilizer, insecticide, paint, chemical, brewing, food, drug, paper, plastic, and similar process industries.

In the fertilizer industry, the unit would have greatest application in the storage of conditioners. Vibra Screw engineers point out that the unloader could be used in conjunction with a vibrating screw feeder to apply conditioners to urea prills or ammonium nitrate. The feeder also might be positioned over the conveyor prior to bagging.★★

## PEST ROUNDUP

(From Page 61)

serious in southeastern counties. Sixty-five new spots of infestation were found in a late September survey, as compared with 40 in mid-September. The increase was due to heavy rains of 4 to 10 inches that hampered controls. Intensive controls will be necessary, when ground conditions permit, to prevent large overwintering beetle populations.

In California, heavy populations of horntails (*Sirex spp.*) were severely damaging fire-injured timber in the Tahoe area of El Dorado and Placer Counties. The number of new dwellings being damaged by the emergence of these insects caused sawmill owners to seek treatment of the lumber from several hundred million board feet of timber being logged. Unless satis-

factory economic treatment is developed, several mills will cease cutting salvage logs.

No further pink bollworm specimens have been found in the central Arizona eradication area since the two larvae were found near Stanfield, as reported in this magazine last month. In Graham County, even though the populations were generally light, heavy infestations were recorded in an area near Solomon, with 70 to 80 percent of the bolls being infested.★★

## NFSA MEETING

(From Page 26)

they would go along with the dealer and use whatever brand he carries.

### Aids to Sales

A panel discussion on aids to future sales was moderated by Dr. J. L. Strauss, Ris-Van, Inc., Belmond, Iowa. Included on the panel were: Herb Ray, Stauffer Chemical Co., Omaha, Nebraska; Earl C. Spurrier, Monsanto Chemical Co., St. Louis; Clark Sumner, A. R. Maas Division, Southgate, Calif.; and Ellery L. Knake, University of Illinois, Urbana.

Also on the panel were: L. T. Stone, Goodpasture Grain & Milling, Brownfield, Texas; George P. Lippincott, Dorchester Fertilizer Co., Cambridge, Md.; Jim Merri-man, Merriman Fertilizers, Monticello, Illinois; and W. A. Senesac, Senesac Fertilizers, Inc., Fowler, Indiana.

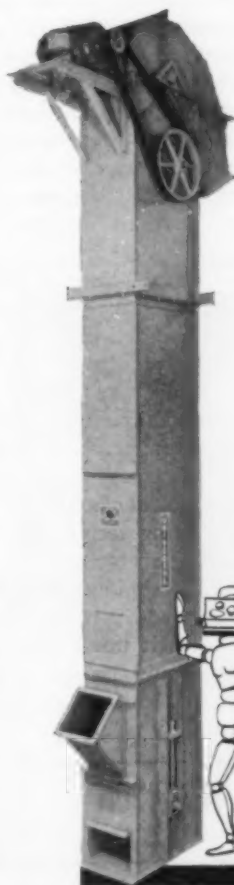
Dr. Day pointed out that chemical herbicides are becoming more important. If farmers are encouraged to use herbicides, he said, they will get better crops and will be better customers. Dr. Spurrier added that it should be pointed out to farmers that weeds take up a good deal of plant food from the soil, besides competing with the crop for soil and water. Dr. Knake cautioned, however, that in selling herbicides "you have to consider the problem, just as you make a soil test before selling fertilizer."

Dr. Spurrier pointed out that recent developments in fertilizer applying equipment that place the starter fertilizer two inches down and two inches to the side of the seeded area have made the addition of soil pesticides to starter fertilizers less effective because the pesticides are placed too far away from the seeded area. Now, he said, the best method appears to be the addition of pesticides to the pre-plant fertilizer.

Dr. Strauss, however, said that in his area, they have achieved good results by using Aldrin and

Heptachlor with starter fertilizer. In this same regard, Dr. Day said, "The amount of pesticide, and where you put it, has a direct bearing on the results."

There are soil tests that can be used to determine a need for minor elements, Mr. Sumner told the group, but the best method for determining minor element deficiencies seems to be observation of the crop. He added that foliar application of chelated trace elements is the most rapid method of applying them. It should be remembered, he cautioned, that the toxic



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level of these materials is close to the effective level.

The panel appeared unanimous in its opinion that side dressing is important. Mr. Stone said that it means an extra  $\frac{1}{2}$ -bale of cotton per acre in his area. Mr. Merriam said that at least 65 per cent of his customers have changed from pre-plant and starter fertilizers to liquid side dress. The plant food applied as a side dress when corn plants are six inches high, he said, has given the best results.

Mr. Sumner, said that he would not recommend applying complete fertilizer as a side dress after the crop is more than a month old. The plants take up all their phosphate early in the season, he explained, so any applied after that period is wasted. Dr. Strauss said, however, that in his area they have been applying phosphorus after the deficiency has shown up in the plants, and have received good results. He suggested that this might

be another service that liquid fertilizer producers might offer.

In conclusion, Dr. Strauss said that what is needed is a complete program for the farmer. To do this, he said, we need to know the answers. He urged liquid fertilizer producers to consult regularly with their extension agents and agricultural colleges for answers to problems.

Next year, the National Fertilizer Solutions Association will meet at the Deauville Hotel in Miami Beach, Fla., November 5 to 7.★★

## CONTROL OFFICIALS

(From Page 34)

The publishing of tonnage data by fertilizer control officials is a real service, Mr. DeSalvo said, both to the fertilizer industry (they can see how their sales are faring in relation to those of competitors) and to the experiment stations (who are able to tell if their soil test recommendations are being followed).

Industry, he said, also can help cement better relations with control officials by becoming more interested in their problems. Industry should study any proposed changes in regulations and make constructive recommendations to the control officials. They also should advise control officials about new manufacturing techniques so that they will be able to adjust their analytical techniques to meet the changes. In addition, Mr. DeSalvo concluded, it would help if the industry would consult with control officials about any mutual problems.★★

## FERGUSON

(From Page 17)

has given relatively short notice to registrants with respect to obtaining additional residue data on some registered uses before requiring modified labelling. It is difficult to understand why it has taken five years to discover the need for additional data."

The delegated functions, he urged, should either be exercised by the respective regulatory agencies, or the law should be changed to expedite the decision-making process.

Dr. Ferguson discussed the problems that the pesticide industry faces because of the lack of knowledge on the part of the general public of the essential role of pesticides in growing the nation's food supply. The grower, of course, knows how important pesticides are, but only 8% of the population is now engaged in agriculture. The other 92%, which knows nothing about how foods are grown, simply takes for granted the availability of high quality food at low prices. A small number of these consumers are highly vocal with respect to "natural" foods and the use of chemicals. They often assert that the growing process is something that should take place under so-called natural conditions. Yet they seldom seem to realize that, "if natural conditions prevailed, 90% of our crops and food animals would be non-existent on the American continent."

Dr. Ferguson gave a large share of the credit to agricultural chemicals for the high standard of living and the continually increasing national production that we have in the United States today. If we followed the advice of the group of well-meaning but ill-informed people who are hostile to pesticide use, he observed, we would have to return to a peasant type agriculture and find some place to send millions of surplus population who could no longer be fed.

"How do we sell the importance of agricultural technology to the consumer?" Dr. Ferguson asked. "Every dead robin — every dead fish — is alleged to be due to the use of agricultural chemicals — or pesticides to be more specific. Millions of acres of forests may be lost to insect epidemics because of political weakness in the face of loud cries from fanatical groups who allege themselves to represent the public, and who are trying to

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prevent the use of some mysterious substance which will adversely affect wildlife, whereas the loss of trees and forests will have an immeasurably greater effect on this same wildlife that they are so fanatically trying to protect. This is literally a case of not being able to see the forest for the trees. Forest fires make the headlines, but the more insidious insects and diseases that cause seven times the damage of forest fires are unknown to the public at large. They are not spectacular—they do not make the headlines. If the market were suddenly flooded with wormy apples, it might make the headlines — but normal shipments of clean, high-quality apples are taken for granted."

The NACA, Dr. Ferguson pointed out, has only a limited budget, and cannot afford to spend much more on publicity than it is now spending. However, he urged that the industry abandon its defensive attitude and tell a more positive story on the contributions that pesticides make. "We need more effort in the promotion of our products for use in the protection of wildlife habitats and the conservation of natural resources. Under today's conditions chemical pesticides are necessary to protect the natural resources which some fanatical groups accuse us of destroying. Perhaps we have relied too much on technical language in our publicity — perhaps we should pull the stops and let the public know what great catastrophes *could* happen were they not prevented."★★

## SPENCER

(From Page 18)

management. The Bureau instituted a program two years ago in which firms producing agricultural chemicals were asked to work with the Bureau in developing and testing pesticides and repellents for use in controlling fish and wildlife populations. The bureau became interested in the program because they had found that the necessity to protect plants from wildlife

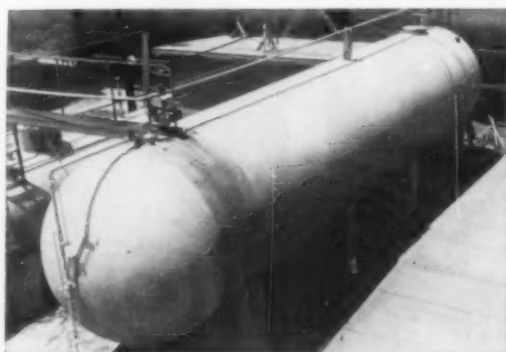
damage was becoming a more and more important problem in forest and range management. They needed help in developing chemicals that would repel or otherwise manage populations of wildlife without wiping them out completely. It was important to discover and test selective insecticides and other pest control materials which would be effective against specific animals and birds threatening crops, with minimum damage to other wildlife.

It was recognized at the outset that government agencies could not look to private industry to develop such control materials, for the size of the potential market would obviously not be adequate to justify the substantial research and testing costs. The solution was found in an integrated program in which land management and conservation groups shared in the cost of a cooperative project. A pilot program was set up at the Bureau's Wildlife Research Center at Denver.

The program, Mr. Spencer reported, "has succeeded beyond our expectations."

Six chemical companies have participated, and have supplied enough samples of candidate materials to engage the full facilities and staff at the Denver center. The test program, he reported, "has already disclosed a number of compounds that have a wide range of selective toxicity for rodents. Thus it is possible, by varying the chemicals applied to grain bait, to remove meadow mice from a mixed population and leave deer mice unharmed, or vice versa."

A number of chemicals have been revealed that act as attractants, repellents, and acute or cumulative poisons. Of particular interest, Mr. Spencer observed, "is the possibility of introducing a repellent-type chemical into a seed or plant in such a way as to modify the palatability. Such a technique would have the advantage of progressively extending the protection



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against browsing damage to newly developed terminals and foliage through the sap stream."

The patent rights and marketing position of pesticide producers who participate in the cooperative research project are fully protected. They receive immediate results of all the test studies as fast as work is completed.★★

## DEALER SERVICES

(From Page 50)

tional \$3 to \$10 return per acre by the correct use of fertilizer?

To help the customer make more profits, the dealer needs to know what moves the farmer to use fertilizer. A nation-wide farmer survey (NPF) showed soil testing to be the number one factor influencing farmers to use fertilizer—followed by his "own experience" and fertilizer demonstrations.

Soil testing can be a valuable tool in a service program. Behind the recommendations of a soil test

lie years of soil fertility and fertilizer research. A soil test helps the farmer: (1) to select the "right" fertilizer; (2) to maintain balanced fertility; (3) to use high analyses; and (4) to prevent "hidden hunger." This adds up to more efficient fertilizer use at a lower cost.

Soil testing also leads the fertilizer dealer to more profits. Studies show that dealers offering soil sampling services are in a good competitive position. They don't worry so much about competition. Also, dealers offering soil sampling services provide less credit—a low paying service—to their customers. But, perhaps, the real key and answer is this: dealers offering soil testing services are good "consultants" to their customers.

A soil test report provides a tangible tool to get down to some "real fertility planning" with farmers. First of all, a soil test from a college of agriculture is authentic. Secondly, the dealer is in a

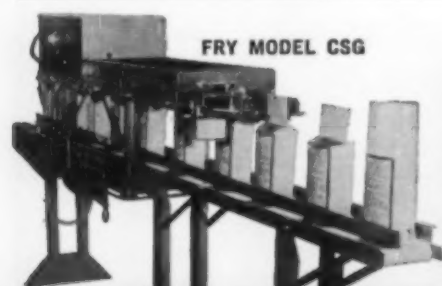
sound "consultant" position. He is promoting the recommendations of an agricultural college, and selling education and fertilizer at the same time. This is an excellent way to have repeat customers.

Demonstrations can be the focal point of farmer meetings and other activities. County agents and other local agricultural workers should be informed about the demonstrations. And, the local newspaper editor, radio farm editor, and agricultural credit agencies also should be invited to the meetings. They, too, are interested in developing a better agriculture. Another important point to remember is that pictures make good news stories. They're very useful in preparing exhibits with a local flavor. A farmer, like everyone else, likes to see himself in a picture, especially if he has beaten his neighbors at growing a crop.

The purpose of a demonstration is to demonstrate that fertilizer, properly used, pays off in increased profits. The county agent usually is willing to lend a helping hand in planning good, simple demonstrations. He knows what fertilizer practices need to be demonstrated and the importance of setting up demonstrations that farmers can understand.

Soil sampling and fertilizer demonstrations are two untapped services that will increase fertilizer sales and profits. But, to be successful, it takes both—soil testing and fertilizer demonstrations—plus cooperation. Cooperation, however, is the key word: Cooperation with the local county agent to promote demonstrations and soil sampling. Cooperation with farm customers in setting up demonstrations. Cooperation with local farm credit sources so they will know the value of fertilizers. Cooperation with local newspaper and radio station to tell the story of soil testing and demonstrations. The evidence is conclusive that this cooperation approach is workable and highly effective.

When fertilizer dealers, together with all other segments in



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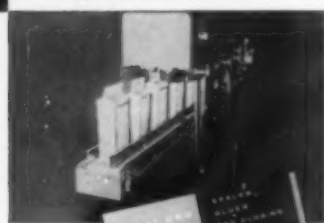
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a six-county area of one state (Georgia), joined forces, fertilizer tonnage used increased 10 percent — plant nutrient usage jumped 17.5 percent—and lime use soared 300 percent. This all took place in a short time—just one year. And, according to the Extension Service Director of the state (W. A. Sutton), the agricultural income in two of the counties increased 35 percent in a three-year period. In one of the counties (Coffee), income increased from about \$14,000,000 to \$20,254,000.

The "right" services, therefore, pay off in increased sales and greater profits. But the "right" services are offered by only a few dealers. Many dealers offer credit and volume discounts. Few dealers offer soil sampling and demonstration service. For every \$46 gross made by dealers offering credit and discounts—those offering soil sampling and demonstration services made \$100. It's the kind and quality of services that count.

Soil sampling and fertilizer demonstrations are two untapped educational tools. They will increase the dealer's profits. Customers will be rewarded too. How well, or how poorly, a dealer succeeds in meeting the demand for such educational services will largely determine his future success in the fertilizer business. Farm customers are depending on the dealer to help them.★★

## OLIN LABORATORY

(From Page 43)

The analytical work has been referred to Olin's research group at New Haven, Conn., which is now preparing data. Target date for completion of registration for sale is 1962.

The new Olin Mathieson research laboratory is located at the Squibb Institute in New Brunswick, N. J. It is an outgrowth of the company's pesticides research operation located previously at Port Jefferson Station, New York. The new facilities, according to Dr.

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R. C. Merrill, associate director of The Squibb Institute, broaden the scope of Olin research at the Institute to include plant as well as human and animal protection.

Unique features of the new laboratory are four specially designed windowless growing rooms where scientists experimenting with plants and organisms can control light intensity and duration, temperature and relative humidity. The "indoor greenhouses" are reported to produce more consistent test results than are obtainable in the more conventional greenhouse environment, which is affected by changes in weather.

Dr. Sylvan Cohen, manager of the agricultural chemicals research laboratory, reported to press representatives visiting the Olin facilities that studies at the New Jersey quarters fall into three basic areas: (1) plant physiology, concerning herbicides, growth regulators and defoliants; (2) entomology, (3) plant pathology, including research on fungi and nematodes. As a promising new chemical moves through various stages of testing, the laboratory's chemical engineering section formulates it for use under field conditions and develops processes to scale up from the laboratory to the pilot plant and then to the commercial manufacturing stage.

In conjunction with the research and laboratory scale formulation facilities, equipment for

manufacturing 10 gallon quantities of agricultural pesticide is available, as well as a third size intermediate pilot formulation plant which produces 200 lb. batches of formulated pesticide.

Other sections of the research section of the new laboratory include a 100 per cent humidity room (where plants inoculated with fungi are placed for an incubation period), a "cold room" for insect studies, precision spraying, water and soil preparation facilities, chemical laboratories and offices.

The Squibb Institute is one of two consolidated research facilities of Olin Mathieson Chemical Corporation. The other is the Olin Research Center, New Haven, Conn., where research is conducted in the areas of packaging films, organic and inorganic chemicals, fuels, propellants, explosives, metals, firearms, etc.★★

## FERTILIZER VIEWS

(From Page 47)

and pesticides reduce or destroy the nutritional value of foodstuffs.

On the contrary, evidence is overwhelming that such chemicals increase and improve the nutritive content of the foodstuffs treated. To give up chemical fertilizers and pesticides, and return to the exclusive use of organic materials on the assumption that, by so doing, disease attacks and insect infesta-

tions would be precluded, would be the acme of folly. A visit to peasant farming in some of the under-developed countries would easily expose the utter nonsense of such claims. It is difficult, as it is, to fight the persistent attacks of insects and plant diseases with the most effective chemical weapons yet devised. To give up such protectants, and rely on organic manures to do the job, would result in such an explosive increase in insect population as to stagger the imagination. We actually are living in an insect age, in which it is absolutely necessary to use all the means science can provide us in order to enjoy the harvests of our agricultural labors.

The anti-chemical propaganda has been able to influence many good citizens who, unfortunately, did not hear both sides of the story. Legislators in several states have been persuaded that new laws should be enacted against the use of agricultural chemicals. To undo the damage already done, and to restore confidence in the wholesomeness and safety of our food supply, is the job that must be done effectively by the industry. Public relations has become an important function in industry's organizational set-up, and it should lose no time in getting going. 1975 is not so many years away and the coming generation will need all the food and fiber our farms can produce.★★

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### Kilmer Joins TVA

Victor J. Kilmer has been appointed assistant to the manager of TVA's Office of Agricultural and Chemical Development at Muscle Shoals, Alabama. Among his new duties will be the coordination of special agricultural and chemical projects, both within TVA and with other agencies and groups.

Mr. Kilmer formerly was with the Agricultural Research Service, U. S. Department of Agriculture, where he was assistant director of the United States Soils Laboratory at Beltsville, Maryland. He was with the Department 17 years.

### Named By Texas Gulf

H. Newton Cunningham has been named assistant sales manager of Texas Gulf Sulphur Co., New York. He has been assistant manager of technical sales service for the company in Houston, Texas, where he will continue to have his office.

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### FFVA Elects J. Abney Cox

J. Abney Cox, Princeton, Fla., was elected president of the Florida Fruit & Vegetable Association during the group's 18th annual convention held at Miami Beach, Sept. 27-29.

Retiring president J. P. Harilee Jr., Palmetto, Fla., was elected vice president, and Joffre C. David will continue to serve as secretary-treasurer and general manager of the association offices at Orlando, Fla.

About 1500 people representing all phases of agriculture attended the convention.

### A. H. Rowan Dies

Archibald H. Rowan, former chairman of the board of the American branch of the Albatros Superfosfaatfabrieken, a Dutch chemical fertilizer firm, died recently in Princeton, N. J. He was 82.

### Rex Buys Plant Site

Rex, Inc., Huntsville, Alabama, recently acquired a 40,000 sq. ft. manufacturing plant on Decatur Rd., in Huntsville, where the company will manufacture and assemble tanks and other liquid fertilizer equipment.

Rex will produce and market a complete line of both trailer and tractor-mounted anhydrous ammonia applicators and storage, transport, and application equipment for liquid fertilizer.

## 140 Exhibits Feature Eastern Lawn And Garden Show

MORE than 140 exhibits were displayed at the Eastern Lawn Garden and Allied Products Trade Show at the New York Coliseum, October 20, 21 and 22. Among the exhibitors was Geigy Agricultural Chemicals, Ardsley, New York, displaying the insecticides, Chlorobenzilate, Simazine, and Spectracide, and a plant nutrient, Sequestrene.

American Agricultural Chemical Co., New York, presented "Agrico" fertilizers, plant foods, and lawn tonics. Dow Chemical Company, Midland, Michigan, offered its crab grass killer, "Zytron." E. I. du Pont de Nemours & Company showed a complete line of garden foods, insecticides and fungicides, that featured two new products, a Du Pont rose spray and a DuPont Japanese Beetle spray.

Agrow Seed Company, Cambridge, New York, displayed lawn products including "Vigropak" sealed in an all metal can which is said to seal in potency and eliminate waste. The Stadler Fertilizer Company, Cleveland, Ohio, featured lawn foods, fertilizers, and weed killers in addition to a new Fold-A-Kart garden cart.

Chipman Chemical Company, Bound Brook, New Jersey, presented Atlas "A", an all purpose weed and grass killer for the non-selective control of all vegetation on

driveways, walks, paths, patios, and many other locations. Armour Agricultural Chemical Company displayed a new durable spreader that is guaranteed for five years and, also, showed its "Vertagreen" line of products for lawns, trees and grasses.

Amchem Products, Inc., Ambler, Pa., reviewed its Weedone products, and the Pax Company of Salt Lake City, Utah showed a crabgrass killer, a lawn food, and a dry insecticide called Pak Punch. A catalog for control of pests of flowers, shrubs and vegetables was offered by B. G. Pratt Company, Paterson, New Jersey, listing their spray and dust products.

Faesy & Besthoff, Inc., New York City, showed its plant foods, Acme Quality Paints, Inc. displayed its insecticides, fungicides, and weed killers.

Organic Compost Corporation, Oxford, Pa. exhibited Fertilife a "living fertilizer, designed to give your soil new life." California Chemical Company, Ortho Division, San Francisco, California, gave out a lawn and garden care book and a lawn and garden products manual of Ortho Products.

### New Products

Highlighting the new products offered was Gard-N-Stik by Gansco Products, Inc., New York City.

Gard-N-Stik, an new organic-based fertilizer in stick form, controls direct root feeding, offering safe and effective nourishment lasting for months. Ross Insecticides, Inc., Des Moines, Iowa, showed its new soil injector which will help nourish plants by root feeding.

A new insect fogger, displayed by Burgess Vibrocrafter, Inc., Grayslake, Illinois, was another interesting new product along with the non-metallic garden sprayer by Sol-Kraft, Inc., Long Island, N. Y.

Hoffco, Inc., Richmond, Indiana, introduced a year-round garden tool called "Gard-n-ette" and the Cyclone Seeder Company, Inc., Urbana, Indiana, featured a new rotary spreader. D. B. Smith Company, Inc., Utica, New York, exhibited an all-purpose "Garden-King" power sprayer, Hayes Spray Gun Company, Pasadena, California, displayed all-purpose home garden sprayers, and A. W. Francis Company, Somerset, Pa., showed garden and lawn accessories.

### To Study Manpower

A symposium at the annual meeting of the American Institute of Chemical Engineers in the Hotel Commodore, New York, December 5, will be entitled "Technical Manpower Utilization in the Chemical Process Industries of 1982." On the panel will be: W. E. Hanford, vice president for research and development, Olin Mathieson Chemical Co., New York; Donald L. Katz, chairman of the School of Chemical and Metallurgical Engineering, University of Michigan; Warren L. McCabe, administration dean of Polytechnic Institute of Brooklyn; and Jerry McAfee, vice president, Gulf Oil Corp., Pittsburgh, Pa.

### Heads Chicago Sales

Joseph I. Rue has been appointed manager of Chicago district sales for Hooker Chemical Corporation's Eastern Chemical Division. He had been Hooker's chemical sales representative in Michigan.

### Alabama Pest Control Conf.

The 15th Alabama Pest Control Conference and the annual meeting of the Alabama Association for Control of Economic Pests will be held February 14 and 15 at Auburn University, Auburn, Alabama.

### Wrich Joins Chemagro

Mitchell J. Wrich has been appointed research field representative by Chemagro Corp., Kansas City, Mo. He is assigned to the company's North Central Region, with headquarters in Sioux Falls, S.D. Prior to joining Chemagro, Mr. Wrich was with the U.S. De-

partment of Agriculture in Kerrville, Texas.

### New Monsanto Herbicides

Monsanto Chemical Co.'s Agricultural Chemicals Division, St. Louis, Mo., has developed two herbicides which will be available to growers in time for the 1962 planting season. One of the herbicides, tradenamed Avadex BW, is designed specifically for maximum wild oat control in wheat and barley. The other new product, tradenamed Rogue, provides control of infestation by grass and certain broadleaf weeds in rice fields.



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## TALE ENDS

**L**ATEST magazine to get into the anti-pesticide act is the *Police Gazette*. The November, 1961, issue carries an article which is billed as an exclusive interview with Abraham Ribicoff, secretary of HEW, under the title, "The One Man Who Can Stop Food Poisoning."

Asserting that "this champion of unpopular causes hints at a crackdown on all additives," the author of the article, George Roberts, opens with the rather ominous assertion that "The next bite of food you take will, in all probability, be poisoned with an arsenic derivative (spelling Mr. Roberts') or some other chemical additive." Despite the serious threat which the *Police Gazette* professes to find to the nation's health,

Mr. Ribicoff, they regret, "has no immediate plans to do anything about this situation."

They quote Mr. Ribicoff as follows: "It's true that many untested chemicals are being used in foods, but just as soon as medical evidence is produced showing that they have harmful effects they are immediately ordered discontinued."

"We already know that the use of some sprays on agricultural crops poses a threat to the nation's health. I've instructed our Food and Drug Administration people to attempt to work out a program that will assure no undue risk to the public."

"I'm making my own study of this whole situation. If the facts justify it, I will be prepared to go to Congress

personally in 1962 with a program of proposed legislation."

In attempting to obtain further information about the *Police Gazette* article, we find that there is some question that any true interview actually took place. The Office of Information of FDA denies knowledge of it.

AC

The Arkansas Extension Service is making available, at reproduction costs, full-color signs that are intended to pro-



mote soil testing. They have found that billboard space frequently will be donated by local banks and interested commercial establishments in counties where soil fertility is stressed.

AC

Rohm & Haas are on the receiving end of some complimentary remarks in a recent bulletin issued by the Agricultural Aircraft Association, Fresno, Calif. They are singled out for praise for an intelligent job of cooperating with aerial applicators on an educational campaign in advance of the introduction of a new herbicide. R & H asked the association to call a meeting of aerial operators in the area where the new herbicide will be introduced in 1962. At the meeting, application of the herbicide will be discussed, questions answered, and problems anticipated before they arise. The AAA, the bulletin emphasizes, is always happy to cooperate with manufacturers of pesticides, herbicides, etc. This type of cooperation in the introduction of new products can result in substantial reduction of problems that might otherwise arise, such as damage to adjoining crops from drift.

AC

We heard a fine definition of the three ways "to go broke" at the recent NACA meeting from one of the participants. *Horses, he observed, are the fastest, women the most enjoyable, and the insecticide business the surest.*

AC

Members of the program committee for last month's NACA convention were understandably unhappy over inability of their featured speaker, Abraham Ribicoff, secretary of the Department of HEW, to attend the convention and deliver his address personally, as scheduled. He asked Ivan Nestingen, under secretary, to pinch hit for him. We hear over the Washington grape vine, however, that it may have been the secretary who spoke after all, for rumor has it that there may shortly be a switch in jobs, with Mr. Nestingen moving up, and Secretary Ribicoff going to another important government post.

### A TYPICAL AGRICULTURAL CHEMICALS SUBSCRIBER TELLS

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*In this "hurry-up" world it is difficult to find time to read all the technical articles and attend all the industry meetings we should. It is reassuring to know that I can read concise, well-written articles in AGRICULTURAL CHEMICALS and pretty well keep abreast of important industry news, views, and technical developments. I consider AGRICULTURAL CHEMICALS to be a "must" on my preferred list of reading materials.*

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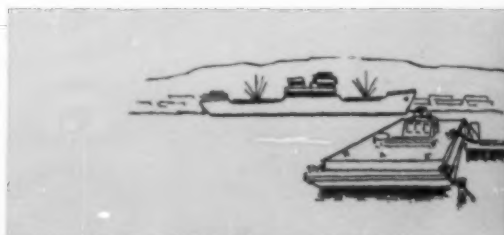
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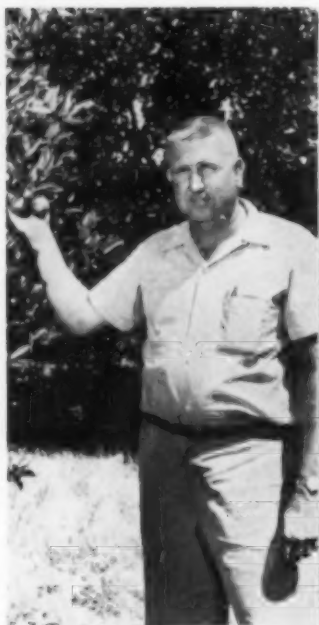


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